State of Ohio Environmental Protection Agency

RE: FINAL PERMIT TO INSTALL **CERTIFIED MAIL**
ASHTABULA COUNTY

Street Address:
122 S. Front Street
Lazarus Gov. Center **TELE:** (614) 644-3020 **FAX:** (614) 644-2329
Mailing Address:
Lazarus Gov. Center
P.O. Box 1049

Application No: 02-17794

DATE: 9/25/2003

Third Dimension, Inc.
Louis DeJesus
PO Box 309
Geneva, OH 440410309

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed within thirty (30) days after the notice of the Directors action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
309 South Fourth Street, Room 222
Columbus, Ohio 43215

Sincerely,

Michael W. Ahern

Michael W. Ahern, Supervisor
Field Operations and Permit Section
Division of Air Pollution Control

CC: USEPA **NEDO**

STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

Permit To Install	**Issue Date: 9/25/2003**
Terms and Conditions	**Effective Date: 9/25/2003**

FINAL PERMIT TO INSTALL 02-17794

Application Number:	02-17794
APS Premise Number:	0204030449
Permit Fee:	**$1200**
Name of Facility:	Third Dimension, Inc.
Person to Contact:	Louis DeJesus
Address:	PO Box 309 Geneva, OH 440410309

Location of proposed air contaminant source(s) [emissions unit(s)]:
633 Pleasant Ave
Geneva, **Ohio**

Description of proposed emissions unit(s):
2 pre-expansion limes for expandable polystyrene and polyethylene/polystyrene foam products, and a group of 2 molding machines.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

Part I - GENERAL TERMS AND CONDITIONS

A. Permit to Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements

The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

3. Records Retention Requirements

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized

representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

6. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

7. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

8. Termination of Permit to Install

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

9. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio

Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

10. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

13. Source Operation and Operating Permit Requirements After Completion of Construction

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

14. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

15. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

B. Permit to Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

Pollutant	Tons Per Year
OC/VOC	94.1

Emissions Unit ID: **P001**

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P001 - Pre-expansion line no. 1 with pre-puff aging for expandable polystyrene (EPS) and expandable polyethylene/polystyrene (EPE/EPS) foam products	OAC rule 3745-31-05(A)(3)	Organic compound (OC) emissions shall not exceed 105 lbs/hr and 69.3 tons/year. The requirements of this rule also include compliance with the requirements of OAC rule 3745-31-05(D). See term A.2.a.
Emissions units P001 - P003	OAC rule 3745-31-05(D)	The combined OC emissions from emissions units P001, P002 and P003 shall not exceed 94.1 tons/year based upon a rolling 12-month summation of the monthly emissions. See terms A.2.b., B.1. and B.2.

2. Additional Terms and Conditions

2.a The OC emissions are comprised of pentane, which is also a volatile organic compound (VOC) as defined in OAC rule 3745-21-01(B)(6).

2.b To ensure enforceability during the first 12 calendar months of operation the permitee shall not exceed the emissions levels specified in the following table from all operations associated with P001, P002 and P003 (resin pre-expansion, pre-puff aging and storage, pre-puff molding, and product aging and storage):

Month(s)	Maximum Allowable Cumulative OC Emissions, Tons at P001, P002 and P003
1	7.8

1 - 2	15.7
1 - 3	23.5
1 - 4	31.4
1 - 5	39.2
1 - 6	47.1
1 - 7	54.9
1 - 8	62.7
1 - 9	70.6
1 - 10	78.4
1 - 11	86.2
1 - 12	94.1

After the first 12 calendar months of operation, compliance with the annual limitation for 94.1 tons/year from all operations at P001, P002 and P003 shall be based upon a rolling 12-month summation of the monthly OC emissions.

B. Operational Restrictions

1. The blowing agent (pentane) content of each resin employed shall not exceed 10% by weight.

2. The combined annual OC emissions limitation for P001, P002 and P003 shall be achieved by restricting the maximum quantity of resin employed at the pre-expansion operations (i.e. P001 and P002) to a cumulative total weight of 1,980,000 pounds/year, based on a rolling 12-month summation basis. To ensure enforceability during the first 12 calendar months of operation, the permittee shall not exceed the resin usage levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Resin Usage, Pounds at P001 and P002
1	165,000
1 - 2	330,000
1 - 3	495,000
1 - 4	660,000
1 - 5	825,000
1 - 6	990,000
1 - 7	1,155,000
1 - 8	1,320,000
1 - 9	1,485,000
1 - 10	1,650,000
1 - 11	1,815,000
1 - 12	1,980,000

After the first 12 calendar months of operation, compliance with the annual resin usage limitation shall be based upon a rolling, 12-month summation of the resin usage employed at the pre-expansion operations at P001 and P002.

C. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information each day for this emissions unit:

a. the name and company identification of each resin material employed:
b. an identification of each resin material composition as expandable polystyrene (EPS) or expandable polyethylene/polystyrene (EPE/EPS);
c. the weight of each resin material employed, in pounds per day;
d. the blowing agent (pentane) content , PC, of each resin material employed, in percent by weight;
e. the total daily OC emissions from the use of all resin materials employed, in pounds per day;
f. the actual number of hours this emissions unit was in operation, in hours per day; and
g. the average, hourly OC emissions rate, i.e., (e)/(f), in pounds per hour (average).

2. The permittee shall collect and record the following information each month:

a. the total monthly OC emissions from the use of all resin materials employed at this emissions unit, in tons/month;
b. the combined total monthly OC emissions from all operations at P001, P002 and P003, in tons/month;
c. during the first 12 calendar months of operation, the combined total cumulative monthly OC emissions from P001, P002 and P003, in tons; and
d. beginning after the first 12 calendar months of operation, the combined rolling 12-month summation of total OC emissions from P001, P002 and P003, in tons/year.

3. The permittee shall collect and record the following information each month for all resin pre-expansion operations (i.e. P001 and P002):

a. the combined total weight of all resin materials employed at all resin pre-expansion operations at P001 and P002, in pounds per month;
b. during the first 12 calendar months of operation, the combined total cumulative monthly resin usage at P001 and P002, in pounds; and
c. beginning after the first 12 calendar months of operation, the rolling 12-month summation of combined total resin usage at P001 and P002, in pounds/year.

4. The permit to install for this emissions unit was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the

Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Emission Unit(s) ID	Pollutant	Thres-hold Limit Value (TLV) ($\mu g/m^3$)	Maximum Emissions lbs/hr	Maximum Emissions g/sec	Estimated 1 Hour Maximum Ground Level Concentration ($\mu g/m^3$)	Maximum Acceptable Ground Level Concentration (MAGLC), ($\mu g/m^3$)
P001 + P002, pre-expansion	pentane	177,0552	2 x 75 = 150	18.939394	14,572	
P001 + P002, prepuff storage	pentane	177,0552	2 x 30 = 60	7.575758	6,661	
P003	pentane	177,0552	105	13.25758	11,579	
P001 + P002 + P003	pentane	177,0552			32,813	42,156

5. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

6. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

a. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

b. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

c. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

d. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information for this emissions unit:

a. an identification of each day during which the average hourly OC emissions from resin materials usage exceeded 105 pounds/hour, and the actual average hourly OC emissions for each such day; and

b. an identification of each day during which the blowing agent (pentane) content of each resin employed exceeded 10%, by weight, and the actual blowing agent (pentane) content for each such day.

2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of all exceedances of the rolling, 12-month resin materials usage limitation for combined operations at P001 and P002, and for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative resin materials usage levels, and the actual rolling 12-month resin materials usage or the actual cumulative resin materials usage, for each such month.

3. The permittee shall submit quarterly deviation (excursion) reports that include an identification of all exceedances of the rolling, 12-month OC emissions limitation for the combined operations at P001, P002 and P003, and for the first 12 calendar months of operation all exceedances of the maximum allowable cumulative emission levels, and the actual rolling 12-month OC emissions levels or the actual cumulative OC emissions, for each such month.

4. The permittee shall submit annual reports which specify the OC emissions from this emissions unit for the previous calendar year, in tons/year. These reports shall be submitted by February 1 of each year.

5. The permittee shall submit annual reports which specify the combined OC emissions from emissions units P001, P002 and P003, for the previous calendar year. These reports shall be submitted by February 1 of each year.

E. Testing Requirements

1. Compliance with the emission limitation(s) and operating restriction(s) in Sections A. and B. of these terms and conditions shall be determined in accordance with the following method(s):

a. Emissions Limitation: 105 lbs OC/hr from this emissions unit.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.g. Determination of the daily OC emissions may be based on the following equation:

E_OC = [summation of (Wi_Ri x Pi) from i =1 to i=n] x (EF_pre-expand + EF_pre-puff).
where:
E_OC = the daily, OC emissions for all resin materials from the pre-expansion operation and the pre-puff aging operation, in pounds per day.

Wi_Ri = the weight of resin "i" employed, in pounds per day.
i = an identifier denoting an individual resin material.
n = the total number of different resin materials employed throughout the day.
Pi = the available blowing agent (pentane) content of resin "i".

EF_pre-expand_EPS = emission factor for OC emissions from the pre-expansion operation, which is 0.30 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide", by Nova Chemicals, an EPS resin bead manufacturer.

EF_pre-expand_EPS/EPE = emission factor for OC emissions from the pre-expansion operation, which is 0.50 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals. "Arcel" is a brand name for EPS/EPE resin manufactured by Nova Chemicals.

EF_pre-puff_EPS = emission factor for OC emissions from the pre-puff aging operation, which is 0.20 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide" by Nova Chemicals.

EF_pre-puff_EPS/EPE = emission factor for OC emissions from the pre-puff aging operation, which is 0.20 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals.

If required, the permittee shall demonstrate compliance with this emissions limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 25A, Method 25 or Method 18, as appropriate, or an equivalent alternate method as approved by Ohio EPA.

b. Emissions Limitation: 69.3 TPY OC from this emissions unit.

Applicable Compliance Method: Compliance shall be based on the sum of the daily OC emission rates from the resin pre-expansion and pre-puff aging operations, E_OC, as specified in section E.1.a. of this permit for the calendar year, and shall be divided by 2,000 pounds/ton.

c. Emission Limitation: 94.1 TPY OC, as a 12-month rolling average, from emissions units P001, P002 and P003.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.2.

d. Operating Restriction: Blowing agent (pentane) content limit of 10%, by weight, of each resin from this emissions unit.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.d.

e. Operating Restriction: Resin usage limit of 1,980,000 lbs/yr, as a 12-month rolling average, from emissions units P001 and P002.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.3.

2. Any determination of available blowing agent (pentane) content (percent by weight) or density of a material shall be based on the material as employed . The permittee shall determine the composition of the material by formulation data supplied by the manufacturer or from data determined by an analysis of each material, as employed, by U.S. EPA Reference Method 24 as referenced in 40 CFR Part 60, Appendix A. If formulation data is employed, Ohio EPA may require the permittee to have a Reference Method 24 analysis or an equivalent, alternative method (as approved by Ohio EPA) performed on the material(s).

F. Miscellaneous Requirements

1. Pursuant to OAC rule 3745-31-05(D), the following terms and conditions are federally

enforceable: sections A., B., C.1., C.2., C.3., D., E. and F. The permittee has requested that such restrictions be imposed in order to limit the potential to emit for volatile organic compounds, as pentane, and therefore avoid major source status for Title V Operating Permit rules applicability as well as Prevention of Significant Deterioration rules applicability.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P002 - Pre-expansion line no. 1 with pre-puff aging for expandable polystyrene (EPS) and expandable polyethylene/polystyrene (EPE/EPS) foam products	OAC rule 3745-31-05(A)(3)	Organic compound (OC) emissions shall not exceed 105 lbs/hr and 69.3 tons/year. The requirements of this rule also include compliance with the requirements of OAC rule 3745-31-05(D). See term A.2.a.
	0AC rule 3745-31-05(D)	The combined OC emissions from emissions units P001, P002 and P003 shall not exceed 94.1 tons/year based upon a rolling 12-month summation of the monthly emissions. See terms A.2.b., B.1. and B.2.

2. Additional Terms and Conditions

2.a The OC emissions are comprised of pentane, which is also a volatile organic compound (VOC) as defined in OAC rule 3745-21-01(B)(6).

2.b To ensure enforceability during the first 12 calendar months of operation the permittee shall not exceed the emissions levels specified in the following table from all operations associated with P001, P002 and P003 (resin pre-expansion, pre-puff aging and storage, pre-puff molding, and product aging and storage):

Month(s)	Maximum Allowable Cumulative OC Emissions, Tons at P001, P002 and P003

1	7.8
1 - 2	15.7
1 - 3	23.5
1 - 4	31.4
1 - 5	39.2
1 - 6	47.1
1 - 7	54.9
1 - 8	62.7
1 - 9	70.6
1 - 10	78.4
1 - 11	86.2
1 - 12	94.1

After the first 12 calendar months of operation, compliance with the annual limitation for 94.1 tons/year from all operations at P001, P002 and P003 shall be based upon a rolling 12-month summation of the monthly OC emissions.

B. Operational Restrictions

1. The blowing agent (pentane) content of each resin employed shall not exceed 10% by weight.

2. The combined annual OC emissions limitation for P001, P002 and P003 shall be achieved by restricting the maximum quantity of resin employed at the pre-expansion operations (i.e. P001 and P002) to a cumulative total weight of 1,980,000 pounds/year, based on a rolling 12-month summation basis. To ensure enforceability during the first 12 calendar months of operation, the permittee shall not exceed the resin usage levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Resin Usage, Pounds at P001 and P002
1	165,000
1 - 2	330,000
1 - 3	495,000
1 - 4	660,000
1 - 5	825,000
1 - 6	990,000
1 - 7	1,155,000
1 - 8	1,320,000
1 - 9	1,485,000
1 - 10	1,650,000
1 - 11	1,815,000
1 - 12	1,980,000

After the first 12 calendar months of operation, compliance with the annual resin usage limitation shall be based upon a rolling, 12-month summation of the resin usage employed at the pre-expansion operations at P001 and P002.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following information each day for this emissions unit:

a. the name and company identification of each resin material employed:
b. an identification of each resin material composition as expandable polystyrene (EPS) or expandable polyethylene/polystyrene (EPE/EPS);
c. the weight of each resin material employed, in pounds per day;
d. the blowing agent (pentane) content , PC, of each resin material employed, in percent by weight;
e. the total daily OC emissions from the use of all resin materials employed, in pounds per day;
f. the actual number of hours this emissions unit was in operation, in hours per day; and
g. the average, hourly OC emissions rate, i.e., (e)/(f), in pounds per hour (average).

2. The permittee shall collect and record the following information each month:

a. the total monthly OC emissions from the use of all resin materials employed at this emissions unit, in tons/month;
b. the combined total monthly OC emissions from all operations at P001, P002 and P003, in tons/month;
c. during the first 12 calendar months of operation, the combined total cumulative monthly OC emissions from P001, P002 and P003, in tons; and
d. beginning after the first 12 calendar months of operation, the combined rolling 12-month summation of total OC emissions from P001, P002 and P003, in tons/year.

3. The permittee shall collect and record the following information each month for all resin pre-expansion operations (i.e. P001 and P002):

a. the combined total weight of all resin materials employed at all resin pre-expansion operations at P001 and P002, in pounds per month;
b. during the first 12 calendar months of operation, the combined total cumulative monthly resin usage at P001 and P002, in pounds; and
c. beginning after the first 12 calendar months of operation, the rolling 12-month summation of combined total resin usage at P001 and P002, in pounds/year.

4. The permit to install for this emissions unit was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the

Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Emission Unit(s) ID	Pollutant	Thres-hold Limit Value (TLV) (µg/m³)	Maximum Emissions lbs/hr	Maximum Emissions g/sec	Estimated 1 Hour Maximum Ground Level Concentration (µg/m³)	Maximum Acceptable Ground Level Concentration (MAGLC), (µg/m³)
P001 + P002, pre-expansion	pentane	177,0552	2 x 75 = 150	18.939394	14,572	
P001 + P002, prepuff storage	pentane	177,0552	2 x 30 = 60	7.575758	6,661	
P003	pentane	177,0552	105	13.25758	11,579	
P001 + P002 + P003	pentane	177,0552			32,813	42,156

5. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

6. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

a. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

b. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

c. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

d. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information for this emissions unit:

a. an identification of each day during which the average hourly OC emissions from resin materials usage exceeded 105 pounds/hour, and the actual average hourly OC emissions for each such day; and

b. an identification of each day during which the blowing agent (pentane) content of each resin employed exceeded 10%, by weight, and the actual blowing agent (pentane) content for each such day.

2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of all exceedances of the rolling, 12-month resin materials usage limitation for combined operations at P001 and P002, and for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative resin materials usage levels, and the actual rolling 12-month resin materials usage or the actual cumulative resin materials usage, for each such month.

3. The permittee shall submit quarterly deviation (excursion) reports that include an identification of all exceedances of the rolling, 12-month OC emissions limitation for the combined operations at P001, P002 and P003, and for the first 12 calendar months of operation all exceedances of the maximum allowable cumulative emission levels, and the actual rolling 12-month OC emissions levels or the actual cumulative OC emissions, for each such month.

4. The permittee shall submit annual reports which specify the OC emissions from this emissions unit for the previous calendar year, in tons/year. These reports shall be submitted by February 1 of each year.

5. The permittee shall submit annual reports which specify the combined OC emissions from emissions units P001, P002 and P003, for the previous calendar year. These reports shall be submitted by February 1 of each year.

E. Testing Requirements

Emissions Unit ID: **P002**

1. Compliance with the emission limitation(s) and operating restriction(s) in Sections A. and B. of these terms and conditions shall be determined in accordance with the following method(s):

a. Emissions Limitation: 105 lbs OC/hr from this emissions unit.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.g. Determination of the daily OC emissions may be based on the following equation:

E_OC = [summation of (Wi_Ri x Pi) from i =1 to i=n] x (EF_pre-expand + EF_pre-puff).

where:

E_OC = the daily, OC emissions for all resin materials from the pre-expansion operation and the pre-puff aging operation, in pounds per day.

Wi_Ri = the weight of resin "i" employed, in pounds per day.
i = an identifier denoting an individual resin material.
n = the total number of different resin materials employed throughout the day.
Pi = the available blowing agent (pentane) content of resin "i".

EF_pre-expand_EPS= emission factor for OC emissions from the pre-expansion operation, which is 0.30 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide", by Nova Chemicals, an EPS resin bead manufacturer.

EF_pre-expand_EPS/EPE= emission factor for OC emissions from the pre-expansion operation, which is 0.50 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals. "Arcel" is a brand name for EPS/EPE resin manufactured by Nova Chemicals.

EF_pre-puff_EPS= emission factor for OC emissions from the pre-puff aging operation, which is 0.20 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide" by Nova Chemicals.

EF_pre-puff_EPS/EPE = emission factor for OC emissions from the pre-puff aging operation, which is 0.20 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals.

Emissions Unit ID: **P002**

If required, the permittee shall demonstrate compliance with this emissions limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 25A, Method 25 or Method 18, as appropriate, or an equivalent alternate method as approved by Ohio EPA.

b. Emissions Limitation: 69.3 TPY OC from this emissions unit.

Applicable Compliance Method: Compliance shall be based on the sum of the daily OC emission rates from the resin pre-expansion and pre-puff aging operations, E_OC, as specified in section E.1.a. of this permit for the calendar year, and shall be divided by 2,000 pounds/ton.

c. Emission Limitation: 94.1 TPY OC, as a 12-month rolling average, from emissions units P001, P002 and P003.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.2.

d. Operating Restriction: Blowing agent (pentane) content limit of 10%, by weight, of each resin from this emissions unit.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.d.

e. Operating Restriction: Resin usage limit of 1,980,000 lbs/yr, as a 12-month rolling average, from emissions units P001 and P002.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.3.

2. Any determination of available blowing agent (pentane) content (percent by weight) or density of a material shall be based on the material as employed . The permittee shall determine the composition of the material by formulation data supplied by the manufacturer or from data determined by an analysis of each material, as employed, by U.S. EPA Reference Method 24 as referenced in 40 CFR Part 60, Appendix A. If formulation data is employed, Ohio EPA may require the permittee to have a Reference Method 24 analysis or an equivalent, alternative method (as approved by Ohio EPA) performed on the material(s).

F. Miscellaneous Requirements

1. Pursuant to OAC rule 3745-31-05(D), the following terms and conditions are federally enforceable: sections A., B., C.1., C.2., C.3., D., E. and F. The permittee has requested that such restrictions be imposed in order to limit the potential to emit for volatile organic compounds, as pentane, and therefore avoid major source status for Title V Operating Permit rules applicability as well as Prevention of Significant Deterioration rules applicability.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P003 - Molding machines nos. 1, 2 and 3 for expandable polystyrene foam and polystyrene/polyethylene foam products with product aging	OAC rule 3745-31-05(A)(3)	Organic compound (OC) emissions shall not exceed 105 lbs/hr and 34.7 tons/year. The requirements of this rule also include compliance with the requirements of OAC rule 3745-31-05(D). See term A.2.a.
Emissions units P001 - P003	OAC rule 3745-31-05(D)	The combined OC emissions from emissions units P001, P002 and P003 shall not exceed 94.1 tons/year based upon a rolling 12-month summation of the monthly emissions. See terms A.2.b. and B.1.

2. Additional Terms and Conditions

2.a The OC emissions are comprised of pentane, which is also a volatile organic compound (VOC) as defined in OAC rule 3745-21-01(B)(6).

2.b To ensure enforceability during the first 12 calendar months of operation the permittee shall not exceed the emissions levels specified in the following table from all operations associated with P001, P002 and P003 (resin pre-expansion, pre-puff aging and storage, pre-puff molding, and product aging and storage):

Month(s)	Maximum Allowable Cumulative OC Emissions, Tons at P001, P002 and P003

1	7.8
1 - 2	15.7
1 - 3	23.5
1 - 4	31.4
1 - 5	39.2
1 - 6	47.1
1 - 7	54.9
1 - 8	62.7
1 - 9	70.6
1 - 10	78.4
1 - 11	86.2
1 - 12	94.1

After the first 12 calendar months of operation, compliance with the annual limitation for 94.1 tons/year from all operations at P001, P002 and P003 shall be based upon a rolling 12-month summation of the monthly OC emissions.

B. Operational Restrictions

1. Only pre-puff resin that is processed at on-site pre-expansion lines (P001 or P002) may be molded at any of the molding machines associated with this emissions unit.

C. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information each day for this emissions unit:

a. the name and company identification of each pre-puff material employed;
b. an identification of the on-site expansion line (i. e. P001 or P002) where the pre-puff material was processed;
c. an identification of each pre-puff material composition as expandable polystyrene (EPS) or expandable polyethylene/polystyrene (EPE/EPS);
d. the **net** weight of each pre-puff material employed, in pounds per day;
e. for each pre-puff material, the initial blowing agent (pentane) content of the original resin material employed, in percent by weight;
f. the total daily OC emissions from the use of all pre-puff materials employed, in pounds per day;
g. the actual number of hours this emissions unit was in operation, in hours per day; and
h. the average, hourly OC emissions rate, i.e., (f)/(g), in pounds per hour (average).

2. The permittee shall collect and record the following information each month:

a. the total monthly OC emissions from the use of all pre-puff materials employed at this emissions

unit, in tons/month;
b. the combined total monthly OC emissions from all operations at P001, P002 and P003, in tons/month;
c. during the first 12 calendar months of operation, the combined total cumulative monthly OC emissions from P001, P002 and P003, in tons; and
d. beginning after the first 12 calendar months of operation, the combined rolling 12-month summation of total OC emissions from P001, P002 and P003, in tons/year.

3. The permit to install for this emissions unit was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Emission Unit(s) ID	Pollutant	Thres-hold Limit Value (TLV) ($\mu g/m^3$)	Maximum Emissions lbs/hr	Maximum Emissions g/sec	Estimated 1 Hour Maximum Ground Level Concentration ($\mu g/m^3$)	Maximum Acceptable Ground Level Concentration (MAGLC), ($\mu g/m^3$)
P001 + P002, pre-expansion	pentane	177,0552	2 x 75 = 150	18.939394	14,572	
P001 + P002, prepuff storage	pentane	177,0552	2 x 30 = 60	7.575758	6,661	
P003	pentane	177,0552	105	13.25758	11,579	
P001 + P002 + P003	pentane	177,0552			32,813	42,156

4. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

5. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

a. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

b. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

c. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

d. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information for this emissions unit:

a. an identification of each day during which the average hourly OC emissions from pre-puff materials usage exceeded 105 pounds/hour, and the actual average hourly OC emissions for each such day; and

b. an identification of each day during which pre-puff material that was not processed at on-site expansion line (i. e. P001 or P002) was employed at this emissions unit.

2. The permittee shall submit quarterly deviation (excursion) reports that include an identification of all exceedances of the rolling, 12-month OC emissions limitation for the combined operations at P001, P002 and P003, and for the first 12 calendar months of operation all exceedances of the maximum

allowable cumulative emission levels, and the actual rolling 12-month OC emissions levels or the actual cumulative OC emissions, for each such month.

3. The permittee shall submit annual reports which specify the OC emissions from this emissions unit for the previous calendar year, in tons/year. These reports shall be submitted by February 1 of each year.

4. The permittee shall submit annual reports which specify the combined OC emissions from emissions units P001, P002 and P003, for the previous calendar year. These reports shall be submitted by February 1 of each year.

E. Testing Requirements

1. Compliance with the emission limitation(s) and operating restriction(s) in Sections A. and B. of these terms and conditions shall be determined in accordance with the following method(s):

a. Emissions Limitation: 105 lbs OC/hr from this emissions unit.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.h. Determination of the daily OC emissions may be based on the following equation:

E_OC = [summation of (Wi_PPFi x Pi) from i =1 to i=n] x (EF_mold + EF_product aging).

where:

E_OC = the daily, OC emissions for all pre-puff materials from the molding operation and the product aging operation, in pounds per day.

Wi_PPFi = the net weight of resin "i" employed, in pounds per day.
i = an identifier denoting an individual pre-puff material.
n = the total number of different prepuff materials employed throughout the day.
Pi = the initial blowing agent (pentane) content of the original resin "i" employed.

EF_mold_EPS= emission factor for OC emissions from the molding operation, which is 0.25 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide", by Nova Chemicals, an EPS resin bead manufacturer.

EF_mold_EPS/EPE= emission factor for OC emissions from the molding operation, which is 0.20 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals.

"Arcel" is a brand name for EPS/EPE resin manufactured by Nova Chemicals.

EF_product aging_EPS = emission factor for OC emissions from the product aging operation, which is 0.10 lb OC pounds per pound of available pentane content from EPS resin, as noted on page 11 of "Expandable Polystyrene: Storage and Handling Safety Guide" by Nova Chemicals.

EF_product aging_EPS/EPE = emission factor for OC emissions from the pre-puff aging operation, which is 0.05 lb OC pounds per pound of available pentane content from EPS/EPE resin, as noted in "% of VOCs Lost During Processing Arcel", by Nova Chemicals.

If required, the permittee shall demonstrate compliance with this emissions limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 25A, Method 25 or Method 18, as appropriate, or an equivalent alternate method as approved by Ohio EPA.

b. Emissions Limitation: 34.7 TPY OC from this emissions unit.

Applicable Compliance Method: Compliance shall be based on the sum of the daily OC emission rates from the resin pre-expansion and pre-puff aging operations, E_OC, as specified in section E.1.a. of this permit for the calendar year, and shall be divided by 2,000 pounds/ton.

c. Emission Limitation: 94.1 TPY OC, as a 12-month rolling average, from emissions units P001, P002 and P003.

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.2.

d. Operating Restriction: Pre-puff material that was not processed at an on-site expansion line (i. e. P001 or P002) may not be employed at this emissions unit

Applicable Compliance Method: Compliance shall be demonstrated in accordance with the record keeping requirements specified in section C.1.b.

2. Any determination of initial blowing agent (pentane) content (percent by weight) or density of a resin material shall be based on the material as employed at the pre-expansion line (P001 or P002). The permittee shall determine the composition of the material by formulation data supplied by the manufacturer or from data determined by an analysis of each material, as employed, by U.S. EPA Reference Method 24 as referenced in 40 CFR Part 60, Appendix A. If

formulation data is employed, Ohio EPA may require the permittee to have a Reference Method 24 analysis or an equivalent, alternative method (as approved by Ohio EPA) performed on the material(s).

F. Miscellaneous Requirements

1. Pursuant to OAC rule 3745-31-05(D), the following terms and conditions are federally enforceable: sections A., B., C.1., C.2., D., E. and F. The permittee has requested that such restrictions be imposed in order to limit the potential to emit for volatile organic compounds, as pentane, and therefore avoid major source status for Title V Operating Permit rules applicability as well as Prevention of Significant Deterioration rules applicability.