CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

Arrowhead Plastic Engineering, Inc.
2909 South Hoyt Avenue
Muncie, Indiana 47302

is hereby authorized to construct and operate a new Gel Coat booth identified as EU-01K, capable of coating 80 pounds per hour (lb/hr) and will be vented to stack 11. The plant also consists of the following existing equipment on page 2 of 10:

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP- 035-8244-00046	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

(a) One (1) Gel coat/Resin molding booth, identified as EU-01A, and is capable of molding 30 pounds per hour (lb/hr) of resin and 10 lb/hr of gel coat.

(b) One (1) Resin lay-up booth, identified as Blue Bird EU-01B, and is capable of laying-up 65 lb/hr of resin.

(c) Two (2) Gel coat booths, identified as EU-01C and EU-01G, and are capable of coating 60 lb/hr and 90 lb/hr of gel coat respectively.

(d) One (1) Resin transfer molding (RTM), identified as, EU-01D, and is capable of molding 75 lb/hr of resin.

(e) One (1) mold repair, identified as EU-01E, which is rated at 65 lb/hr.

(f) One (1) mold prep, identified as EU-01F, which is rated at 65 lb/hr.

(g) Three (3) chop booths, identified as EU-01H, EU-01I, and EU-01J. EU01H and EU-01I are both rated at 120 lb/hr, and EU-01J is rated at 90 lb/hr, and

(h) One (1) touch-up area, identified as EU-01L, which is rated at 6.02 lb/hr.

Each booth is equipped with a High Volume Low Pressure (HVLP) gun and an air atomized gun. Each booth is also equipped with dry filters to control PM overspray.

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).

2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

   (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.

   (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

   (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

   (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).

   (e) The Permittee has submitted their Part 70 permit application (T035-6049-00046) on February 27, 1997 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

7. That when the facility is constructed and placed into operation the following operation conditions shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

(a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

(b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

(c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

(a) In the event that ownership of this custom fiberglass parts manufacturing plant is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

7. BACT Minor Limitation

(a) The VOC input usage from the new Gel Coat Booth, EU-01K shall be limited to 24 tons per 12 month period, rolled on a monthly basis. Therefore, the Best Available control Technology (BACT) requirements of 326 IAC 8-1-6 will not apply.

(b) During the first 12 months of operation, the VOC input usage shall be limited such that the total usage divided by the accumulated months of operation shall not exceed the limit specified.

BACT Determination

8. The BACT determined for the fiberglass production line shall be the following:

(a) That the VOC input usage from the fiberglass production line except from the new Gel Coat Booth EU-01K, Resin Booth EU-01F and Chop Booth EU-01J shall be limited to 179.5 tons per 12 month period, rolled on a monthly basis.

(b) Acetone shall be utilized for cleaning purposes.

(c) Lower styrene content resins shall be utilized from the lamination areas for hand lay up operations.

(d) Air assisted airless spray equipment shall be used for the lamination and gel coat applications to reduce material usage. Hand lay up shall be used for approximately 30-40% of the products produced, and air atomized cup guns shall be used for repairs of gel coat in the Final Finish area.

(e) Resin Transfer Molding (RTM) process shall be used for one part, which is the production of firemen's helmet.

(f) The application equipment operators shall be instructed and trained on the methods and practices utilized to minimize the overspray emitted on the floor and onto the air filters.

(g) The overspray shall be minimized by spraying as close as practical into the molds.

(h) Storage containers used to store VOC and/or HAPs containing material shall be kept tightly covered when not in use, and

(i) Other solvent containers used to transport solvent from drums to work stations be closed containers having soft gasketed spring-loaded closures.

Compliance with this condition shall deem the Best Available Control Technology (BACT) requirements under 326 IAC 8-1-6, satisfied.

9. PSD Minor Source Limit

That the sourcewide VOC input usage shall be limited to 249 tons per 12 month period, rolled on a monthly basis. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

Annual Emission Reporting

10. That pursuant to 326 IAC 2-6 (Emission Reporting), the owner/operator of Arrowhead Plastic Engineering, Inc. must annually submit an emission statement for the facility. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

Technical Support and Modeling, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Opacity Limitations

11. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

(a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.

(b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

12. Particulate Matter Limitations

That pursuant to 326 IAC 6-3 (Process Operations):

(a) The dry filters for particulate matter overspray control shall be in operation at all times when the coating booths are in operation.

(b) The fiberglass lay up operation shall comply with 326 IAC 6-3-2(c), using the following equation:

$E = 4.10P^{0.67}$ where: E = rate of emission in pounds per hour,
P = process weight in tons per hour.

(c) Daily inspections shall be performed to verify the placement, integrity and particulate loading of the filters.

(d) Additional inspections and preventive measures shall be performed as prescribed in the Preventive Maintenance Plan.

Fugitive Dust Emissions

13. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

Open Burning

14. That the permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

15. Reporting Requirements

That a log of information necessary to document compliance with Operation Condition Nos. 7, 8 and 9 shall be maintained. These records shall be kept for at least the past 36 month period and shall include the coating, thinner, and clean-up solvent usage, Material Safety Data Sheets (MSDS) and the date of use, and made available upon request to the Office of Air Management (OAM).

(a) A quarterly summary shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

within 30 days after the end of the quarter being reported in the format attached.

(b) Unless otherwise specified in this permit, any notice, report, or other submissions required by this permit shall be timely if:

(i) Delivered by U.S. mail and postmarked on or before the date it is due; or

(ii) Delivered by any other method if it is received and stamped by IDEM, OAM, on or before the date it is due.

(c) All instances of deviations from any requirements of this permit must be clearly identified in such reports.

(d) Any corrective actions taken as a result of an exeedance of a limit, an excursion from the parametric values, or a malfunction that may have caused excess emissions must be clearly identified in such reports.

(e) The first report shall cover the period commencing the postmarked submission date of the Affidavit of Construction.

16. Emergency Reduction Plans

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.

(b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within 180 calendar days from the issuance date of this permit.

(c) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM, shall supply such a plan.

(d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

(e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.

(f) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3].

Indiana Department of Environmental Management
Office of Air Management
Compliance Data Section

Company Name: Arrowhead Plastic Engineering, Inc.
Location: 2909 South Hoyt Avenue, Muncie, Indiana 47302
Permit No.: CP 035-8244-00046
Source/Facility: Source wide
Pollutant: Volatile Organic Compounds (VOC)
Limit: 249 tons per 12 month period, rolled on a monthly basis

Month: _____ Year: _____

Month	Column 1	Column 2	Column 1 + 2
	This Month VOC Usage in Tons	Previous 11 Months VOC Usage in Tons	12 Month Total VOC Usage in Tons

Methodology:
Emissions = material usage, lb/mo * % flash off * ton/2000 lb
Note: Use CFA Emission factor for % flash off

Submitted by: ----------

Title/Position: ----------

Signature: ----------

Date: ----------

Indiana Department of Environmental Management
Office of Air Management
Compliance Data Section

Company Name: Arrowhead Plastic Engineering, Inc.
Location: 2909 South Hoyt Avenue, Muncie, Indiana 47302
Permit No.: CP 035-8244-00046
Source/Facility: Fiberglass production line, except from the new Gel Coat Booth EU-01K, Resin Booth EU-01F and Chop Booth EU-01J
Pollutant: Volatile Organic Compounds (VOC)
Limit: 179.5 tons per 12-month period, rolled on a monthly basis

Month: _____ **Year:** _____

Month	Column 1	Column 2	Column 1 + 2
	This Month VOC Usage in Tons	Previous 11 Months VOC Usage in Tons	12 Month Total VOC Usage in Tons

Methodology:
Emissions = material usage, lb/mo * % flash off * ton/2000 lb
Note: Use CFA Emission factor for % flash off

Submitted by: ----------

Title/Position: ----------

Signature: ----------

Date: ----------

Indiana Department of Environmental Management
Office of Air Management
Compliance Data Section

Company Name: Arrowhead Plastic Engineering, Inc.
Location: 2909 South Hoyt Avenue, Muncie, Indiana 47302
Permit No.: CP 035-8244-00046
Source/Facility: New Gel Coat Booth EU-01K
Pollutant: Volatile Organic Compounds (VOC)
Limit: 24 tons per 12-month period, rolled on a monthly basis

Month: _____ Year: _____

Month	Column 1 This Month VOC Usage in Tons	Column 1 Previous 11 Months VOC Usage in Tons	Column 1 + 2 12 Month Total VOC Usage in Tons

Methodology:
Emissions = material usage, lb/mo * % flash off * ton/2000 lb
Note: Use CFA Emission factor for % flash off

Submitted by: ----------

Title/Position: ----------

Signature: ----------

Date: ----------

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	Arrowhead Plastic Engineering, Inc.
Source Location:	2909 South Hoyt Avenue, Muncie, Indiana 47302
County:	Delaware
Construction Permit No.:	CP035-8244-00046
SIC Code:	3089
Permit Reviewer:	Aida De Guzman

The Office of Air Management (OAM) has reviewed an application from Arrowhead Plastic Engineering, Inc. relating to the operation of a custom fiberglass parts manufacturing plant, which includes the construction and operation of a new Gel Coat Booth identified as EU-01K, which will be vented to stack 11, and the following unpermitted facilities:

(a) One (1) Gel coat/Resin molding booth, identified as EU-01A, and is capable of molding 30 pounds per hour (lb/hr) of resin and 10 lb/hr of gel coat. This booth was constructed in 1987.

(b) One (1) Resin lay-up booth, identified as Blue Bird EU-01B, and is capable of laying-up 65 lb/hr of resin. This booth was constructed in 1985.

(c) Two (2) Gel coat booths, identified as EU-01C and EU-01G, and are capable of coating 60 lb/hr and 90 lb/hr of gel coat respectively. Booth EU-01C was constructed in 1994 and booth EU-01G was constructed in 1985.

(d) One (1) Resin transfer molding (RTM), identified as, EU-01D, and is capable of molding 75 lb/hr of resin. This booth was constructed in 1984.

(e) One (1) mold repair, identified as EU-01E, which is rated at 65 lb/hr. This booth was constructed in 1995.

(f) One (1) mold prep, identified as EU-01F, which is rated at 65 lb/hr. This booth was constructed in June 1977.

(g) Three (3) chop booths, identified as EU-01H, EU-01I, and EU-01J. EU01H and EU-01I are both rated at 120 lb/hr, and EU-01J is rated at 90 lb/hr. Booths EU-01H and EU-01I were constructed in 1988, and booth EU-01J was constructed in June 1977.

(h) One (1) touch-up area, identified as EU-01L, which is rated at 6.02 lb/hr. This booth was constructed in 1994.

Each booth is equipped with a High Volume Low Pressure (HVLP) gun and an air atomized gun. Each booth is also equipped with dry filters to control PM overspray.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
SV1	Mold Department EU-01A	12	1.5	3,920	Ambient
SV2	Resin Booth EU-01B	14	2	7,985	Ambient
SV4	Gel Coat Booth EU-01C	14	2	7,985	Ambient
SV5 & 6	Mold Prep EU-01F	0	2	6,555	Ambient
SV 7a & 7b	Gel Coat Booth EU-01G	14	2	7,985	Ambient
SV 8a	Chop Booth EU-01I	8	2	7,985	Ambient
SV 8b		8	2	9,335	Ambient
SV 9a & 9b	Chop Booth EU-01H	8	2	9,335	Ambient
SV 10	Chop Booth EU-01J	24	2	9,335	Ambient
SV 11	Proposed Gel Coat EU-01K	12	2	9,335	Ambient
SV 13	Touch-up area EU-01L	15	2	9,335	Ambient
SV 13		5	1.5	6,555	Ambient

Enforcement Issue

IDEM is aware that all the above mentioned facilities except for the proposed Gel Coat Booth EU-01K have been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on February 27, 1997, with additional information received on April 25, 1997. Arrowhead Plastic Engineering, Inc., realized that the process weight rate included in the application was erroneous. This information was corrected by the applicant and was received by the OAM on May 7, 1997.

On September 23, 1997, the company was faxed a copy of the air toxic modeling done and was advised to adjust the stack height in accordance with the GEP, to lower the concentration of Dimethyl Phthalate, which is currently at 79.5% of the OSHA PEL of 5 mg/m^3. On October 30, 1997, Bruce Carter has informed the OAM that a verification was made from the manufacturer (elf atochem) about the volatilization of the HAPs content of Lupersol DDM-9. The manufacturer stated that this HAP is not volatilized because of its low vapor pressure at 1 MMHG, it is all reacted and formed as part of the product. This information was also verified by the OAM.

Emissions Calculations

(A) Fiberglass Operations (Using CFA Emission Factors):

Material	Pound Per Part	Part Per Hour	Wt. % Styrene Monomer	% Flash Off	Transfer Efficiency	VOC Emissions (ton/yr)	PM Emissions (ton/yr)
Proposed Gel Coat Booth							
AF light gray & luppersol	1.0	78.4	36.8%	18.8%	75%	64.6	30.6
(Mold Dept.) Booth EU-01A							
Resin & super ox	1.0	29.57	45%	14.1%	75%	18.0	13.6
Gel coat & super ox	1.0	9.8	45%	27.1%	75%	11.6	3.8
Release agent	0.02	39.4	99.3%	100%	75%	3.4	0.0
Booth EU-01B (Blue Bird)							
Resin & luppersol	1.0	64.07	40.9%	11.3%	75%	31.7	27.8
Gel Coat Booth EU-01C							
Light gray & luppersol	1.0	58.8	36.85%	18.8%	75%	48.4	22.7
Booth EU-01D							
RTM resin & Dimethylaniline	1.0	75	100%	3%	75%	9.9	0.0
Filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb *100%				75%	0.48	0.0
Release agent	0.13 lb /hr * 8760 hr/yr * ton/2000 lb * 99. 3% *100%				75%	0.57	0.0
(Mold Repair) Booth 01-E							
Resin & super ox	1.0	64.1	47.7 %	16.3%	75%	45.8	32.4

Booth EU-01F							
resin & luppersol	1.0	67.07	40. 9%	11.3%	75%	33.2	43.4
Release agent	0.01	67.07	99.3%	100%	75%	2.9	71.9
Gel Coat Booth EU-01G							
Light gray & luppersol	1.0	88.2	42%	24%	75%	92.3	39.0
Chop Booth EU-01H							
Resin & luppersol	1.0	118.29	47.8%	16.3%	75%	84.4	60.9
Filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb *100%				75%	0.48	0.0
Chop Booth EU-01I							
Resin & luppersol	1.0	118.29	47.8%	16.3%	75%	84.4	60.9
Chop Booth EU-01J							
Resin & luppersol	1.0	123.2	47.8%	16.3%	75%	87.9	63.4
Touch-up Booth EU-01L							
Vinyl ester resin	1.0	0.77	48%	16.3%	75%	0.59	0.59
Uro primer filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb *100%				75%	0.48	0.0
Bondo filler	0.06 lb/hr * 8760 hr/yr * ton/2000 lb *15% * 100%				75%	0.04	0.0
TOTAL						601.2	423.8

Methodology:
VOC Emissions = lb/part * part/hr * 8760 hr/yr * ton/2000 lb * % flash off
PM Emissions = lb/hr * (1-%manomer) * 1-transfer eff.) * 8760 hr/yr * ton/2000lb

B) Hazardous Air Pollutants (HAPs) Emissions:

										Emissions (tons/year)					
Material	Pound Per Part	Part Per Hour	% wt. Flash Off	Wt % MEK	Wt % Styrene	Wt % Cumene	Wt % Dimethylaniline	Wt % Methyl Methacrylate	Wt. % Glycol Ethers	MEK	Styrene	Cumene	Dimethylaniline	Metthyl methacrylate	Glycol Ethers
Proposed Gel Coat Booth															
AF light gray & luppersol	1.0	78.4	35%	3%	36.85%				27.8%	3.6	44.0				33.4
(Mold Dept.) Booth EU-01A															
Resin and super ox	1.0	29.57	13%		45%	2%		5%			7.6	0.34		0.84	
Gel coat & super ox	1.0	9.8	35%		45%	2%		5%			6.7	0.3		0.75	
Release agent	0.02	39.4	100%		20%						0.69				
Booth EU-01B (Blue Bird)															
Resin & luppersol	1.0	64.07	13%	3%	41%					1.1	14.9				
`Gel Coat Booth EU-01C															
Light gray & luppersol	1.0	58.8	35%	3%	36.85%				27.7%	2.7	33.2				25.05
Booth EU-01D															
RTM resin & Dimethylaniline	1.0	75	3%		35%		99.7%				3.4		9.8		
Filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb * 20%HAP * % flash off										0.1				
(Mold Repair) Booth 01-E															
Resin & super ox	1.0	64.1	3%		41%	2%		5%			3.4	0.17		0.42	
Booth EU-01F															
resin & luppersol	1.0	67.07	13%	3%	41%				27.8%	1.1	15.6				10.6

Gel Coat Booth EU-01G															
Light gray & luppersol	1.0	88.2	35%	3%	36.85%				27.8%	4.0	49.8				37.5
Chop Booth EU-01H															
Resin & luppersol	1.0	118.3	35%	3%	48%				27.8%	2.0	32.3				18.7
Filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb * 20% HAP* % flash off										0.1				
Chop Booth EU-01I															
Resin & luppersol	1.0	118.3	13%	47.8%	13%				27.8%	2.0	32.3				18.7
Chop Booth EU-01J															
Resin & luppersol	1.0	123.2	13.8%	3%	48%				27.8%	2.1	33.6				19.5
Touch-up Booth EU-01L															
Vinyl ester resin	1.0	0.77	13%		47.5%						0.2				
Uro primer filler	0.11 lb/hr * 8760 hr/yr * ton/2000 lb *20%HAP* % flash off										0.1				
TOTAL Single HAP										18.5	270.3	0.81	9.8	2.01	153.45
TOTAL Combined HAPS												454.9			

Methodology:

HAP Emissions = lb/part * part/hr * 8760 hr/yr * ton/2000 lb * wt. % HAP * % flash off

Controlled Emissions:

(1) VOC - There are no control equipment installed for VOC emissions. Therefore, uncontrolled emissions are synonymous with controlled emissions.

(2) PM - Each booth has dry filters, with control efficiency of 98%.

$$\text{Controlled PM Emissions} = 423.8 \text{ tons/year} \frac{(100\%-98\%)}{100}$$

$$= 8.5 \text{ ton/year}$$

Emissions Limit:

All the pollutant emissions will be scaled down based on the VOC limit of 249 tons/year.

(1) $$\text{PM controlled Limit} = \frac{249 \text{ ton/yr}}{601.2 \text{ ton/yr}} * 8.5 \text{ ton/yr}$$

$$= 3.5 \text{ ton/yr}$$

(2) HAPs:

Methodology:

$$\text{HAP Limit} = \frac{\text{VOC limit, 249 ton/yr}}{\text{VOC unlimited emissions, ton/yr}} * \text{HAP pot'l emissions, ton/yr}$$

HAP	Potential Emissions (ton/yr	Limited Emissions (ton/yr)
MEK	18.5	7.7
Styrene	270.3	112.0
Cumene	0.81	0.33
Dimethaniline	9.8	4.0
Methyl Methacrylate	2.01	0.83
Glycol Ethers	153.4	63.5
Total Combined HAPs	454.9	188.0

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity for the existing unpermitted facilities):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	13.5	423.8
Particulate Matter (PM10)	13.5	423.8
Sulfur Dioxide (SO_2)	0	0
Volatile Organic Compounds (VOC)	601.2	601.2
Carbon Monoxide (CO)	0	0
Nitrogen Oxides (NO_x)	0	0
Single Hazardous Air Pollutant (HAP)	270.3	270.3
Combination of HAPs	454.9	454.9

(a) Allowable emissions are determined from the applicability of rule 326 IAC 6-3, Particulate Emission Limitation, using the following equation:

$$E = 4.10\ P^{0.67}$$

Where: E = Allowable PM emissions in lb/hr
P = Process weight in ton/hr

(b) The allowable emissions based on the rules cited are less than the potential emissions, therefore, the allowable emissions are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of volatile organic compounds (VOC) are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

(a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Delaware County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Delaware County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

New Source PSD Definition (limitation on their materials usage to restrict their VOC emissions below the PSD threshold. This limitation includes the new gel coat booth and the unpermitted facilities):

Pollutant	Emissions (ton/yr)
PM	3.5
PM10	3.5
SO_2	0.0
VOC	249
CO	0.0
NO_x	0.0
Single HAP	112.0
Combination HAPs	188.0

This new source is not a major stationary source, because no regulated pollutant is emitted at a rate of 250 tons per year or greater, and it is not one of the 28 listed source categories.

Part 70 Source Determination

326 IAC 2-7 (Part 70 Permit Program)
This new source has submitted their Part 70 permit (T035-6049-00046) on February 27, 1997. The equipment being reviewed and the information provided in this construction permit application also reflects the same information in the submitted Part 70 application.

The application consists of a new gel coat and various unpermitted facilities. The company indicated that the new gel coat booth will be constructed in July, 1997 or as soon as the construction permit is issued. Therefore, a construction permit is being issued at this time, instead of doing the permit review under the Title V Program.

Federal Rule Applicability

New Source Performance Standards (NSPS):
There are no New Source Performance Standards (NSPS) applicable to this source.

National Emission Standards for Hazardous Air Pollutants (NESHAP):
There are no National Emission Standards for Hazardous Air Pollutants (NESHAP) applicable to this source.

State Rule Applicability

326 IAC 6-3: PM allowable emissions:
This rule mandates a PM allowable emissions for the fiberglass lay-up, using the following equation.

For process weight rate up to sixty thousand (60,000) pounds per hour:

$$E = 4.10\ P^{0.67}$$

For process weight rate in excess of sixty thousand (60,000) pounds per hour:

$$E = 55.0\ P^{0.11} - 40$$

Where: E = Allowable PM emissions in lb/hr
P = Process weight in ton/hr

The source will be in compliance with this rule using dry filters to control the PM overspray.

326 IAC 2-6 (Emission Reporting)
This source is subject to 326 IAC 2-6 (Emission Reporting), because the source emits more than 100 tons/yr of VOC. Pursuant to this rule, the owner/operator of this source must annually submit an emission statement of the facility. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 2-2 (Prevention of Significant Deterioration) Requirements
This source is subject to this rule since the potential emissions of VOC are at a rate of more than 250 tons per year.

The source has never emitted any pollutant above the major PSD threshold of 250 tons per year. It is averaging at 44 tons of VOC per year. Therefore, the source's requests for a limit in their material usage, to restrict their VOC emissions below the major source threshold is possible. In this case, this rule would not apply.

326 IAC 8-1-6 (General Reduction Requirements)

(a) The VOC input usage from the new Gel Coat Booth, EU-01K shall be limited to 24 tons per 12 month period, in order to avoid the requirements of 326 IAC 8-1-6.

(b) The fiberglass production line is subject to this rule, since its potential emissions are more than 25 tons of VOC per year. The source submitted a BACT analysis, and the BACT determined is material usage limit and work practices, which read as follows:

(1) That the VOC input usage from the fiberglass production line except from the proposed Gel Coat Booth EU-01K, Resin Booth EU-01F and Chop Booth EU-01J shall be limited to 179.5 tons per 12 month period, rolled on a monthly basis.

(2) Acetone shall be utilized for cleaning purposes.

(3) Lower styrene content resins shall be utilized from the lamination areas for hand lay up operations.

(4) Air assisted airless spray equipment shall be used for the lamination and gel coat applications to reduce material usage. Hand lay up shall be used for approximately 30-40% of the products produced, and air atomized cup guns shall be used for repairs of gel coat in the Final Finish area.

(5) Resin Transfer Molding (RTM) process shall be used for one part, which is the production of firemen's helmet.

(6) The application equipment operators shall be instructed and trained on the methods and practices utilized to minimize the overspray emitted on the floor and onto the air filters.

(7) The overspray shall be minimized by spraying as close as practical into the molds.

(8) Storage containers used to store VOC and/or HAPs containing material shall be kept tightly covered when not in use, and

(9) Other solvent containers used to transport solvent from drums to work stations be closed containers having soft gasketed spring-loaded closures.

Resin Booth EU-01F and Chop Booth EU-01J were constructed prior to the January 1, 1980 applicability date of 326 IAC 8-1-6 and therefore, were not included in the BACT analysis. Resin Booth EU-01 F has a potential VOC emissions of 12.0 tons per year and Chop Booth EU-01J has a potential VOC emissions of 33.5 tons per year.

326 IAC 8-6-1 (Organic Solvent Emissions Limitation)
Resin Booth EU-01F and Chop Booth EU-01J are not subject to 326 IAC 8-6-1 either. Their VOC emissions are less than 100 tons per year, although they were both constructed and operated on June, 1977, i.e., after October 7, 1974 and prior to January 1, 1980 (applicability date of this rule).

BACT for VOC:

Best Available Control Technology (BACT) analysis for this fiberglass production line, submitted by Arrowhead Plastic Engineering, Inc. was conducted in accordance with the "Top Down BACT Guidance from U.S. EPA".

The source's total VOC emissions are 601.2 tons/year. The BACT analysis was based from 246.4 tons of VOC/year.

This analysis evaluated the feasibility of using the following: solvent/material substitution, nonphotochemically reactive solvents, and add-on controls.

Solvent/Material Substitution:

(1) Waterborne Coatings - These are sometimes used to reduce the VOC emissions from painting operations. Paints are reformulated with water replacing some of the volatile organic compounds (VOC). The water becomes a carrier solvent in the process, and is evaporated during the drying process. The drying time of waterborne coatings is dependent upon temperature and humidity, with a higher humidity necessitating longer drying times.

Fiberglass reinforced plastic products such as the parts made by Arrowhead Plastic Engineering, Inc. use resins containing styrene monomer and a polyester or vinyl resin. Unlike the painting process, the styrene monomer is not a carrier solvent, but a cross-linking agent which becomes an integral part of the finish product. The cross-linking would not take place if the styrene monomer were replaced with water.

The replacement of styrene monomer with water is not technically feasible and therefore, is **not** an option.

(2) Nonphotochemically Reactive Solvents

The use of nonphotochemically reactive solvents as a replacement for the styrene monomer, is also **not** feasible because no cross-linking will occur.

(3) Low Styrene Content Resins and Vapor-Suppressed Resins

An EPA sponsored report on VOC emissions in fiberglass boat manufacturing indicated that low styrene content resins are capable of reducing styrene emissions by approximately 19 percent (%) in resin application areas by changing from a 43% styrene content resin to a 35 % resin. Vapor-suppressed resins show potential for additional reduction of styrene emissions but present problems of delamination when used with a multiple layered process such as used by Arrowhead Plastic Engineering, Inc.

The delamination problems reduce the structural integrity of the parts. Vapor-suppressed resins are **not** therefore an option for this source.

Add-On Control

Adsorption, incineration, chemical scrubber, condensation, and biofiltration systems were evaluated for feasible use at this source.

(1) Adsorption - This system operates by providing a large surface area on which the air pollutant can adhere. Carbon is commonly use as the adsorbent or adsorbing media. Due to its pore structure, activated carbon has significant surface area, giving it a large adsorption capacity. Based on the EPA report on fiberglass boat manufacturing industry, which also emits styrene concludes that the use of carbon adsorption system is not feasible for styrene emitting processes at this source. There are no known applications of carbon adsorption to the fiberglass boat manufacturing industry. Use of carbon adsorption in this industry may be restricted due to the potential for styrene to polymerize on the carbon and deactivate the bed. Therefore, this system is **not** technically feasible for Arrowhead Plastic Engineering, Inc. process operation. No further analysis will be made for this control option.

(2) Polyad™ FB(Fluidized Bed)- This system is another type of adsorption system. The Polyad system uses a solid adsorbent material called Bonapore™ which utilizes a continuously fluidized bed. Bonapore is a dry micro porous solid polymer substance, which unlike carbon, may be used for styrene emitting processes. Typical solvents that may be removed by the Polyad FB are chlorinated hydrocarbons, certain Freon, alcohols, aldehydes, ketones, esters, and aromatic and aliphatic hydrocarbons.

Two types of Polyad systems were evaluated for use at the Arrowhead Plastic Engineering, Inc. process operation. The Polyad Recovery System was evaluated to determine the feasibility of recovering acetone and styrene for reuse at this source. The Polyad Concentrator System was also examined for VOC removal and destruction. Both systems are estimated to remove an average of 95% of the styrene in the waste stream. Removal efficiencies for other VOCs are lower or higher depending on the concentration. The benefits of recovering styrene and acetone were examined with the use of the Polyad Recovery System. Although acetone can be recovered, styrene recovery would not be beneficial since the styrene recovered contains impurities that potentially cause discoloration in the finished product.

The Polyad Concentrator System was also evaluated for VOC removal. This system adsorbs VOC from a large volume of air flow. The VOC is then desorbed with hot air sending the concentrated VOC in a smaller volume of air to an oxidizer to be burned. Due to the potential problem of discoloration when using the recovered styrene, only the **Polyad™ Concentrator System will be further evaluated**.

(3) Catalytic Incineration - This system operates similarly to a common afterburner but uses a catalyst to lower the oxidation temperature of the hydrocarbons thus reducing the fuel requirements. This is **not** a technically feasible option because the styrene will likely polymerize on the catalyst rendering the catalyst useless. No further analysis will be made on this control option.

(4) Zeolite Bed Adsorption with Incineration - This system involves adsorbing the VOCs from a large volume air stream onto a bed of activated carbon or zeolite and then the concentrated air stream is incinerated. Carbon concentrator treatment systems are not feasible because of the tendency of the styrene to polymerize on the carbon and deactivate the bed. For this reason a zeolite in place of carbon was considered. The zeolite concentrator works similarly to a carbon concentrator, but unlike carbon, the zeolite can withstand temperatures up to 1,800 ^{o}F, which is hot enough to burn off any styrene. **A Zeolite concentrator is technically feasible and therefore, will be evaluated further.**

(5) Recuperative Thermal Oxidizer Systems - This system uses a high temperature to destroy VOC. It can recover up to 70% of the heat of combustion using a gas-to-gas heat exchanger. **A Recuperative thermal oxidizer system is technically feasible and therefore, will be evaluated further.**

(6) Regenerative Thermal Oxidizer Systems - This system is similar in concept to recuperative thermal oxidizer system, where they both use high temperature to destroy VOC. The difference is the method of preheating the pollutant stream before the combustion chamber. It can recover up to 95% of the heat generated during oxidation process. **This system is technically feasible , and therefore will be evaluated further.**

(7) Chemical Scrubber - This is an absorption system in which the waste stream is dissolved in a solvent. Water is the most common solvent. However, other solvents are used depending on the chemical in the waster stream. The following excerpt from the EPA report concludes that the use of a chemical scrubber is not feasible for fiberglass boat manufacturing which have styrene emissions from the lamination and gel coat operations

identical to Arrowhead Plastic Engineering, Inc. There are no known applications of chemical scrubbers to the fiberglass boat manufacturing industry. However, there are two systems Chemtact™ and Styrex ™ that could theoretically be used for removing styrene from the exhaust air. **Both systems require further testing and analysis to demonstrate commercial viability for the fiberglass manufacturing industry.**

(8) Condensation - This system refrigerates the waste stream in order to condense it. The condensate is then collected and reused on site or treated as a waste. It is highly efficient (9% or greater) for streams with high concentrations of vapors. The condensate from these waste streams would contain several chemicals and not be of value for reuse on site. Arrowhead Plastic Engineering, Inc. air waste stream concentrations are relatively low and is **not** considered a viable option for this source. No further analysis will be made for this control option.

(9) Biofiltration - This system is relatively new to the United States. It is a land intensive set up in which contaminated air is fed under an active bed of soil containing microorganisms. As the air rises through the soil the microorganisms consume the chemicals and convert them into carbon dioxide and water. **There are no known applications of biofiltration for the removal of styrene and VOC from the fiberglass fabrication industry**. In addition, there is not enough open land available adjacent to the source to make a biofiltration system. For these reasons, no further analysis will be made.

Environmental Impacts (see page 1 of 1 TSD appendix A for detailed calculations on each control option)

Emission Factor (MMCF/yr	PM=PM10 (13.7)	SO2 (0.8)	Nox (140)	VOC (2.8)	CO (35)
Fiberglass Production Line (tons/year)					
(Option 1) Regenerative Thermal Oxidation (13.4 mmBtu/hr)	0.8	0.0	8.2	0.2	2.0
(Option 2) Recuperative Thermal Oxidation (18.1 mmBtu/hr)	1.1	0.0	11.1	0.1	2.8
(Option 3) Polyad Concentrator System (0.0)	0.0	0.0	0.0	0.0	0.0
(Option 4) Zeolite Concentrator w/ Oxidizer (4.7 mmBtu/hr)	0.2	0.0	2.1	0.1	0.4
(Option 5) No Add-On Control	0	0	0	0	0

Control option	Overall Control Efficiency	VOC Emissions (t/y)	VOC Emission Reduction (t/y)	VOC After Control (t/y)	Cost $ Per Ton Removed	Energy Impacts (mmBtu/hr)
(Option 1) Regenerative Thermal Oxidation	98%	246.0	241.0	4.9	$5,391	13.4
(Option 2) Recuperative Thermal Oxidation	98%	246.0	241.0	4.9	$6,154	18.1
(Option 3) Zeolite Concentrator w/ Oxidizer	96.4	246.0	237.0	8.8	$2,359	4.7
(Option 4) Polyad Concentrator System (0)	95%	246.0	233.7	12.3	$7,895	0.0
(Option 5) No Add-On Control	0	0	0	0	0	0

Methodology:

Total Capital Cost = Base Price + Direct Installation, Ductwork Cost + Indirect Cost
Total Annual Operating Cost = Direct Operating Cost + Indirect Operating Cost
$ Per Ton VOC Removed = Total Annual Operating Cost / Ton of VOC Removed

The breakdown of the cost are as follows:

(1) Capital Cost

(a) Equipment Cost: purchase price, sales tax, and freight.
(b) Direct Cost: Foundation and support, installation, and ductwork, insulation, piping and painting.
(c) Indirect Cost: Engineering, construction and start-up, contractor's fee, performance testing and contingencies.

(2) Annual Cost

a) Direct Annual Cost: Utilities, operating labor (operator, supervisor) maintenance (labor and materials).
b) Indirect Cost: Overhead, property tax, insurance, capital recovery.

Control option	Equipment Cost	Installation/ Ductwork, etc.	Total capital Cost	Direct Operating Cost	Indirect Operating Cost	Total Annual Cost	Ton of VOC Removed	$ Cost/Ton VOC Removed
(Option 1) Regenerative Thermal Oxidation (13.4 mmBtu/hr)	$1,940,000	$1,009,450	$2,949,450	$819,181	$480,009	$1,299,190	241.0	$5,391
(Option 2) Recuperative Thermal Oxidation (18.1 mmBtu/hr)	$1,940,000	$1,009,450	$2,949,450	$1,003,077	$480,009	$1,483,086	241.0	$6,154
(Option 3) Zeolite Concentrator w/ Oxidizer	$1,879,470	$39,450	$1,918,920	$246,778	$312,295	$559,073	237.0	$2,359
(Option 4) Polyad Concentrator System (0)	Note: $14.21/scf m per Control Tech. Ctr (CTC) Report					$1,845,169	233.7	$7,895
(Option 5) No Add-On Control	0	0	0	0	0	0	0	0

Summary of BACT Analysis:

There are four (4) technically feasible control options that can be applied to Arrowhead Plastic Engineering, Inc. process operation:

(1) Regenerative Thermal Oxidizer - This is technically feasible to Arrowhead Plastic Engineering, Inc. process operation, which has a 98% overall destruction efficiency. However, the company rejected this option as cost prohibitive at $5,391/ton of VOC removed. The company has submitted their profit for the year 1996 and their projected profit for the year 1997 through the year 2000, which was claimed confidential. This data was evaluated and it was determined that **this control option's annualized cost will represent almost 4 times the company's annual profit**.

(2) Recuperative Thermal Oxidizer - This is technically feasible to Arrowhead Plastic Engineering, Inc. process operation, which has a 98% overall destruction efficiency. However, the company rejected this option as cost prohibitive at $6,154/ton of VOC removed. The company has submitted their profit for the year 1996 and their projected profit for the year 1997 through the year 2000, which was claimed confidential. This data was evaluated and it was determined that **this control option's annualized cost will represent almost 4.5 times the company's annual profit**.

(3) Zeolite Concentration w/ Oxidizer - This is technically feasible to Arrowhead Plastic Engineering, Inc. process operation, which has a 96.4% overall destruction efficiency. However, the company rejected this option as cost prohibitive at $2,359/ton of VOC removed. The company has submitted their profit for the year 1996 and their projected profit for the year 1997 through the year 2000, which was claimed confidential. This data was evaluated and it was determined that **this control option's annualized cost will represent almost 2 times the company's annual profit**.

(4) Polyad Concentration System - This is technically feasible to Arrowhead Plastic Engineering, Inc. process operation, which has a 95% overall destruction efficiency. However, the company rejected this option as cost prohibitive at $7,895/ton of VOC removed. The company has submitted their profit for the year 1996 and their projected profit for the year 1997 through the year 2000, which was claimed confidential. This data was evaluated and it was determined that **this control option's annualized cost will represent almost 6 times the company's annual profit**.

VOC BACT Determination:

Since the four technically feasible options are all not cost effective, the BACT determined is the following:

(1) That the VOC input usage from the fiberglass production line except from the proposed Gel Coat Booth EU-01K, Resin Booth EU-01F and Chop Booth EU-01J shall be limited to 179.5 tons per 12 month period, rolled on a monthly basis.

(2) Acetone shall be utilized for cleaning purposes.

(3) Lower styrene content resins shall be utilized from the lamination areas for hand lay up operations.

(4) Air assisted airless spray equipment shall be used for the lamination and gel coat applications to reduce material usage. Hand lay up shall be used for approximately 30-40% of the products produced, and air atomized cup guns shall be used for repairs of gel coat in the Final Finish area.

(5) Resin Transfer Molding (RTM) process shall be used for one part, which is the production of firemen's helmet.

(6) The application equipment operators shall be instructed and trained on the methods and practices utilized to minimize the overspray emitted on the floor and onto the air filters.

(7) The overspray shall be minimized by spraying as close as practical into the molds.

(8) Storage containers used to store VOC and/or HAPs containing material shall be kept tightly covered when not in use, and

(9) Other solvent containers used to transport solvent from drums to work stations be closed containers having soft gasketed spring-loaded closures.

326 IAC 2-1-3.4 (New Source Toxics Control Rule):
The proposed new Gel Coat Booth (EU-01K) is **not** subject to this rule or the MACT because it is not an independent facility by itself that can produce an intermediate or a final product. It is one of the several units that make up a process or a production line.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

(a) The existing facilities together with the proposed facilities will emit levels of air toxics greater than those that constitute major source applicability according to Section 112 of the Clean Air Act. The concentrations of these air toxics were modeled and found to be (in worst case possible) as follows: The concentrations of these air toxics were compared to the Permissible Exposure Limits (PEL) developed by the Occupational Safety and Health Administration (OSHA). The Office of Air Management (OAM) does not have at this time any specific statutory or regulatory authority over these substances.

(b) See detailed air toxic calculations on pages 4 through 6 of this TSD.

Air Toxic	Modeled Concentration (µg/m ^{3})	OSHA PEL Limit ((µg/m ^{3})	% OSHA PEL
MEK	408.3	590,000	0.069
Styrene	2,850	420,000	0.68
Cumene	31.2	245,000	0.013
Methyl Methacrylate	76.3	410,000	0.019
Dimethylaniline	197	25,000	0.79
Glycol Ethers	3378.9	No PEL Limit	

Note:

In the air toxic screening, Dimethyl Phthalate has a concentration of 79.5% as compared to the OSHA PEL of 5 mg/m^3 .

The 32% by wt. Dimethyl Phthalate contained by the material used (Lupersol DDM-9), was verified by Bruce Carter and the OAM from the manufacturer (elf atochem). The manufacturer stated that this HAP is not volatilized because of its low vapor pressure at 1 MMHG, it is all reacted and formed as part of the product. Therefore, Dimethyl Phthalate was omitted from the HAPs being emitted by Arrowhead.

Conclusion

The existing facilities together with the proposed construction of a new gel coat booth will be subject to the conditions of the attached proposed **Construction Permit No. CP-035-8244, Plt ID No. 035-00046.**

Appendix A: Emission Calculations
Natural Gas Combustion Only

Commercial Boiler

Company Name: **Arrowhead Plastic Engineering, Inc.**
Address City IN Zip: **2909 South Hoyt Ave., Muncie, IN**
CP: **035-8244**
Plt ID: **035-00046**
Reviewer: **Aida De Guzman**
Date: **04/30/97**

Heat Input Capacity MMBtu/hr		Potential Throughput MMCF/yr
13.4	option 1	117.4
18.1	option 2	158.7
4.7	option 4	41.2

	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	12.0	12.0	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.7	0.7	0.0	5.9	0.3	1.2
for the 3 options in the BACT	1.1	1.1	0.0	11.1	0.1	2.8
	0.3	0.3	0.0	2.9	0.1	0.7

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Appendix A: Emission Calculations
Natural Gas Combustion Only

Commercial Boiler

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Heat Input Capacity MMBtu/hr		Potential Throughput MMCF/yr
13.4	option 1	117.4
18.1	option 2	158.7
4.7	option 4	41.2

	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	12.0	12.0	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.7	0.7	0.0	5.9	0.3	1.2
for the 3 options in the BACT	1.1	1.1	0.0	11.1	0.1	2.8
	0.3	0.3	0.0	2.9	0.1	0.7

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton