

**AIR PERMIT APPLICATION  
FOR AREA II ADIPIC ACID**

*Ascend Performance Materials LLC  
Pensacola Plant*

**Prepared For:**

**Ascend Performance Materials LLC**

**Prepared By:**

**Golder Associates Inc.  
5100 W. Lemon Street, Suite 208  
Tampa, Florida 33609**

**April 2010  
10389532**

**DISTRIBUTION:**

**4 Copies – Ascend Performance Materials LLC**

**4 Copies – FDEP**

**1 Copy – Golder Associates Inc.**

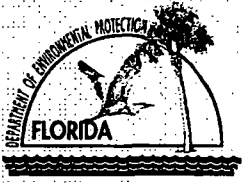
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**APPLICATION FOR AIR PERMIT – LONG FORM**

Other relevant: apps  
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# Department of Environmental Protection

## Division of Air Resource Management

### APPLICATION FOR AIR PERMIT - LONG FORM

#### I. APPLICATION INFORMATION

**Air Construction Permit** – Use this form to apply for an air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

**Air Operation Permit** – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial/revised/renewal Title V air operation permit.

**Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option)** – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

#### Identification of Facility

1. Facility Owner/Company Name: <b>Ascend Performance Materials LLC</b>	
2. Site Name: <b>Pensacola Plant</b>	
3. Facility Identification Number: <b>0330040</b>	
4. Facility Location...: Street Address or Other Locator: <b>3000 Old Chemstrand Road</b> City: <b>Cantonment</b> County: <b>Escambia</b> Zip Code: <b>32533</b>	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

#### Application Contact

1. Application Contact Name: <b>Roy W. Noble, Environmental Specialist</b>	
2. Application Contact Mailing Address... Organization/Firm: <b>Ascend Performance Materials LLC</b> Street Address: <b>P.O. Box 97</b> City: <b>Gonzalez</b> State: <b>FL</b> Zip Code: <b>32560-0097</b>	
3. Application Contact Telephone Numbers... Telephone: <b>( 850 ) 968-8721</b> ext.                      Fax: <b>(850) 968-7220</b>	
4. Application Contact Email Address: <b>rwnobl@ascendmaterials.com</b>	

#### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s): <b>034-AL</b>	4. Siting Number (if applicable):

## APPLICATION INFORMATION

### Purpose of Application

This application for air permit is submitted to obtain: (Check one)

#### **Air Construction Permit**

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

#### **Air Operation Permit**

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

#### **Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)**

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

**Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:**

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

### Application Comment

Ascend is submitting this permit application to increase the permitted annual capacity for adipic acid production from 850 million pounds adipic acid (MAR) to 930 MAR based on a 12 month rolling average. With greater emphasis on minimizing equipment down-time and enhanced management of the unit operation cycle times associated with the process, Ascend has the ability to produce greater than the currently permitted 850 MAR adipic acid without increasing the currently permitted 92,000 lbs/hr KA feed rate to the unit.



# APPLICATION INFORMATION

## Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
<b>Gary L. Moore, Chemical &amp; Utilities Plant Manager</b>
2. Owner/Authorized Representative Mailing Address... Organization/Firm: <b>Ascend Performance Materials LLC</b> Street Address: <b>P.O. Box 97</b> City: <b>Gonzalez</b> State: <b>FL</b> Zip Code: <b>32560-0097</b>
3. Owner/Authorized Representative Telephone Numbers... Telephone: <b>(850) 968-7543</b> ext. Fax: <b>(850) 968-7220</b>
4. Owner/Authorized Representative Email Address: <b>glmoor1@ascendmaterials.com</b>
5. Owner/Authorized Representative Statement: <p><i>I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.</i></p> <p> Signature</p> <p><u>04/05/10</u> Date</p>

# APPLICATION INFORMATION

## Application Responsible Official Certification

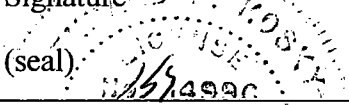
Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:			
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):			
<input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.			
<input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively.			
<input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.			
<input type="checkbox"/> The designated representative at an Acid Rain source.			
3. Application Responsible Official Mailing Address...			
Organization/Firm:			
Street Address:			
City:		State:	Zip Code:
4. Application Responsible Official Telephone Numbers...			
Telephone: ( ) -		ext.	Fax: ( ) -
5. Application Responsible Official Email Address:			
6. Application Responsible Official Certification:			
<i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</i>			
_____ Signature		_____ Date	



**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Kennard F. Kosky</b> Registration Number: <b>14996</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Golder Associates Inc.**</b> Street Address: <b>6241 NW 23<sup>rd</sup> Street, Suite 500</b> City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32653</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(352) 336-5600</b> ext.516 Fax: <b>(352) 336-6603</b>
4. Professional Engineer Email Address: <b>kkosky@golder.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>  Signature: <u><i>Kennard F. Kosky</i></u> Date: <u>4/1/10</u> (seal): 

\* Attach any exception to certification statement.

\*\* Board of Professional Engineers Certificate of Authorization #00001670

# FACILITY INFORMATION

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

1. Facility UTM Coordinates... Zone <b>16</b> East (km) <b>476</b> North (km) <b>3385</b>		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) <b>30/35/56</b> Longitude (DD/MM/SS) <b>87/15/01</b>	
3. Governmental Facility Code: <b>O</b>	4. Facility Status Code: <b>A</b>	5. Facility Major Group SIC Code: <b>28</b>	6. Facility SIC(s): <b>2869</b>
7. Facility Comment :			

#### Facility Contact

1. Facility Contact Name: <b>Roy W. Noble</b>
2. Facility Contact Mailing Address... Organization/Firm: <b>Ascend Performance Materials LLC</b> Street Address: <b>P.O. Box 97</b> City: <b>Gonzalez</b> State: <b>FL</b> Zip Code: <b>32560-0097</b>
3. Facility Contact Telephone Numbers: Telephone: <b>(850) 968-8721</b> ext. Fax: <b>(850) 968-7220</b>
4. Facility Contact Email Address:

#### Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

## FACILITY INFORMATION

### Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	





## FACILITY INFORMATION

### C. FACILITY ADDITIONAL INFORMATION

#### Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>Title V 4/22/05</b>
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>Title V 4/22/05</b>
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>Title V 4/22/05</b>

#### Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input checked="" type="checkbox"/> Attached, Document ID: <b>Attachment A</b>
3. Rule Applicability Analysis: <input checked="" type="checkbox"/> Attached, Document ID: <b>Attachment A</b>
4. List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**FACILITY INFORMATION**

**Additional Requirements for FESOP Applications**

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):  
 Attached, Document ID: \_\_\_\_\_  Not Applicable (no exempt units at facility)

**Additional Requirements for Title V Air Operation Permit Applications**

1. List of Insignificant Activities (Required for initial/renewal applications only):  
 Attached, Document ID: \_\_\_\_\_  Not Applicable (revision application)

2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):  
 Attached, Document ID: \_\_\_\_\_  
 Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan (Required for all initial/revision/renewal applications):  
 Attached, Document ID: \_\_\_\_\_  
Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):  
 Attached, Document ID: \_\_\_\_\_  
 Equipment/Activities On site but Not Required to be Individually Listed  
 Not Applicable

5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :  
 Attached, Document ID: \_\_\_\_\_  Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:  
 Attached, Document ID: \_\_\_\_\_  Not Applicable

**Additional Requirements Comment**

[Empty box for additional requirements comment]

## EMISSIONS UNIT INFORMATION

Section [1]

Area II Adipic Acid/TRU/SCR II

### III. EMISSIONS UNIT INFORMATION

**Title V Air Operation Permit Application** - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

**Air Construction Permit or FESOP Application** - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

**Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application** - Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.



# EMISSIONS UNIT INFORMATION

Section [1]

Area II Adipic Acid/TRU/SCR II

## A. GENERAL EMISSIONS UNIT INFORMATION

### Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

### Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Area II Adipic Acid Process Equipment/Product Synthesis/Refining/Raw Material Recovery**

3. Emissions Unit Identification Number: **002 and 090**

4. Emissions Unit Status Code:  
**A**

5. Commence Construction Date:

6. Initial Startup Date:

7. Emissions Unit Major Group SIC Code:  
**28**

8. Acid Rain Unit?  
 Yes  
 No

9. Package Unit:  
Manufacturer:

Model Number:

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

**Section [1]**

**Area II Adipic Acid/TRU/SCR II**

**Emissions Unit Control Equipment**

1. Control Equipment/Method(s) Description:

**Thermal Reduction Unit (TRU)**

**Selective Catalytic Reduction (SCR I)**

**Backup Selective Catalytic Reduction (SCR II)**

2. Control Device or Method Code(s): **131, 139, 139**

**EMISSIONS UNIT INFORMATION**

Section [1]

Area II Adipic Acid/TRU/SCR II

**B. EMISSIONS UNIT CAPACITY INFORMATION**

(Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate: <b>92,000 lbs KA feed per hour</b>
2. Maximum Production Rate: <b>930,000,000 lbs adipic acid/year</b>
3. Maximum Heat Input Rate:           million Btu/hr
4. Maximum Incineration Rate:       pounds/hr tons/day
5. Requested Maximum Operating Schedule: <b>24hours/day</b> <b>7days/week</b> <b>52weeks/year</b> <b>8760hours/year</b>
6. Operating Capacity/Schedule Comment: <b>KA = Cyclohexane/Cyclohexanol Mixture</b>

**EMISSIONS UNIT INFORMATION**

Section [1]

Area II Adipic Acid/TRU/SCR II

**C. EMISSION POINT (STACK/VENT) INFORMATION**  
(Optional for unregulated emissions units.)**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram: <b>EU002</b>		2. Emission Point Type Code: <b>2</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: <b>Nitric acid reaction and Cyclohexane oxidation off-gasses are burned in the TRU</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>60 feet</b>	7. Exit Diameter: <b>4 feet</b>	
8. Exit Temperature: <b>435 °F</b>	9. Actual Volumetric Flow Rate: <b>45,100 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: <b>dscfm</b>		12. Nonstack Emission Point Height: <b>feet</b>	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:			

**EMISSIONS UNIT INFORMATION**

Section [1]

Area II Adipic Acid/TRU/SCR II

**D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate:** Segment 1 of 1

1. Segment Description (Process/Fuel Type): <b>Adipic Acid Synthesis/Refining</b>		
2. Source Classification Code (SCC): <b>3-01-001-05</b>		3. SCC Units: <b>Tons of Product</b>
4. Maximum Hourly Rate:	5. Maximum Annual Rate: <b>465,000</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:  <b>930,000,000 lbs/year / 2000 lb/ton = 465,000 tons per year.</b>		

**Segment Description and Rate:** Segment \_\_\_\_ of \_\_\_\_

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		



**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [1]  
of [3]  
Area II Adipic Acid/TRU/SCR II

Page [1]

Nitrogen Oxides

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

(Optional for unregulated emissions units.)

**Potential/Estimated Fugitive Emissions**

**Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

1. Pollutant Emitted: <b>NO<sub>x</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>585 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to                      tons/year			
6. Emission Factor: <b>500 ppm 30-day rolling average</b>  Reference: <b>Title V Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>524.9 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/02</b> To: <b>12/31/03</b>	
9.a. Projected Actual Emissions (if required): <b>585 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>See Attachment A.</b>			
11. Potential Fugitive and Actual Emissions Comment:			

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [1]  
of [3]  
Area II Adipic Acid/TRU/SCR II

Page [1]

Nitrogen Oxides

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>500 ppm 30-day rolling average, 585 TPY 12-Month Rolling Average</b>	4. Equivalent Allowable Emissions: lb/hour <b>585 tons/year</b>
5. Method of Compliance: <b>NO<sub>x</sub> Continuous Emissions Monitoring System</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>585 TPY Proposed to Avoid PSD Review.</b>	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	



6. Allowable Emissions Comment (Description of Operating Method):



**EMISSIONS UNIT INFORMATION****POLLUTANT DETAIL INFORMATION**

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Area II Adipic Acid/TRU/SCR II

Carbon Monoxide

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS****Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.****Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	



**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

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Volatile Organic Compounds

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	



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**POLLUTANT DETAIL INFORMATION**

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**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS**

**Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.**

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	





**EMISSIONS UNIT INFORMATION**

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Area II Adipic Acid/TRU/SCR II

**H. CONTINUOUS MONITOR INFORMATION**

Complete if this emissions unit is or would be subject to continuous monitoring.

**Continuous Monitoring System:** Continuous Monitor 1 of 1

1. Parameter Code: <b>EM</b>	2. Pollutant(s): <b>NO<sub>x</sub></b>
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: <b>TECO</b> Model Number: <b>42C</b> Serial Number:	
5. Installation Date:	6. Performance Specification Test Date: <b>3/9/2010</b>
7. Continuous Monitor Comment: <b>Rule 62-4.030, 62-4.070(3)</b>  <b>TRU/SCR I Serial Number: 42C63868-341</b> <b>SCR II Serial Number: 42C63866-342</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_ of \_\_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

**Section [1]**

**Area II Adipic Acid/TRU/SCR II**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>Title V 4/22/05</b>
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>Title V 4/22/05</b>
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>Title V 4/22/05</b>
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

## EMISSIONS UNIT INFORMATION

Section [1]

Area II Adipic Acid/TRU/SCR II

### Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

### Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
2. Compliance Assurance Monitoring <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
3. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
5. Acid Rain Part Application <input type="checkbox"/> Certificate of Representation (EPA Form No. 7610-1) <input type="checkbox"/> Copy Attached, Document ID: _____ <input type="checkbox"/> Acid Rain Part (Form No. 62-210.900(1)(a)) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**

**Section [1]**

**Area II Adipic Acid/TRU/SCR II**

**Additional Requirements Comment**

**ATTACHMENT A**

## ATTACHMENT A

### 1.0 INTRODUCTION

Ascend Performance Materials LLC (Ascend) owns and operates a nylon and intermediate chemical manufacturing facility located in Gonzalez, Florida. This plant is approximately 20 kilometers (km) north of Pensacola on the Escambia River. Various chemicals, including adipic acid, nylon fibers, nylon resins, hexamethylene diamine, and maleic anhydride, are manufactured at the facility. The Pensacola plant is a major facility because the facility is one of the 28 listed sources and potential emissions of at least one regulated pollutant exceeds 100 tons per year (TPY). For minor modifications to a major facility, prevention of significant deterioration (PSD) does not apply for an increase in projected actual emissions not exceeding baseline plus the PSD significant emission rates.

Ascend is submitting this permit application to increase the permitted annual capacity for adipic acid production from 850 million pounds adipic acid (MAR) to 930 MAR based on a 12 month rolling average. With greater emphasis on minimizing equipment down-time and enhanced management of the unit operation cycle times associated with the process, Ascend has the ability to produce greater than the currently permitted 850 MAR adipic acid without increasing the currently permitted 92,000 lbs/hr KA feed rate to the unit. This proposed change is driven by increased customer demand for dry product and the need to simultaneously support nylon salt production. As noted in our current Title V permit, a portion of the adipic acid production is sent to dryers and shipped/sold as dry product to support a segment of customer demand, while the remainder of adipic acid production is further processed into nylon salt for use in the manufacture of nylon polymers. The proposed project will be a minor modification under PSD rules, see Table 1.

Ascend produces adipic acid in Area II through reaction of cyclohexanol and cyclohexanone with nitric acid. Adipic acid is a white crystalline powder predominantly used to produce nylon polymer for fibers and plastics. In addition to nylon production, Ascend produces dry adipic acid as a product. Food grade adipic acid is used in gelatins to promote rapid setting, provide tartness and protect against quality loss. It is also used in beverages, condiments, relishes, dairy product analogs, fats and oils, frozen dairy desserts, puddings, gravies, meat products and snack foods. Technical-grade adipic acid is used to make plasticizers; adds flexibility and resilience to unsaturated polyesters; is used in the production of rigid and flexible foams, wire coatings, elastomers, and adhesives; increases

flexibility of alkyd resins; is used in the production of wet-strength resins for the paper chemicals industry and is used in the production of synthetic lubricants and greases.

## 2.0 PROJECT DESCRIPTION

For this permit application, Area II includes Emission Unit (EU) 002 and 090. In this area, a ketone and alcohol mixture (KA, cyclohexanone/cyclohexanol) is oxidized with nitric acid to produce an Adipic Acid solution. The solution is refined by chilling due to vacuum evaporation, forming Adipic Acid crystals at the bottom of the process vessel. The resulting slurry is centrifuged to remove water and form a wet cake. The wet cake is re-dissolved in pure water and the purified Adipic Acid solution is sent to the downstream Nylon Salt Strike or Drying and Product Loading operations.

The proposed increase in production from this permit revision will be accomplished through changes in methods of operation leading to increased on-stream time along with minor pump optimization associated with the adipic acid refining such as motor sizes, impeller changes, and/or pump replacement. None of these changes will impact the regulatory status of any currently installed equipment. Additionally, there is a distillation column constructed prior to 1980 that is used to remove water from the process to recover nitric acid and is nearing the end of its service life. As this column may need to be replaced within the time window of this application, Ascend requests authorization to replace this column if required. Ascend will conduct detailed engineering design studies and will comply with the appropriate regulatory requirements. A replacement column would be subject to 40 CFR Part 60 Subpart NNN. Ascend will comply with all applicable requirements of Subpart NNN.



### 3.0 EMISSION EVALUATIONS

Physical changes as described in Section 2.0 involve only Area II, Emission Unit (EU) 002 and 090. No physical changes are proposed for any other emission units. While no changes are requested for emission units other than EU 002/090, emission increases associated with production of upstream raw materials for adipic acid production and for the downstream use of the adipic acid are calculated and included in the project. There are no emission changes associated with EU-090 (fugitive emissions) associated with this application as there are no increases in component counts. Fugitive emissions are typically calculated based on the number of components (flanges, valves, pumps, etc.). The application does not propose to change the number of components. Furthermore, the number of leaks should remain independent of these changes. Thus Ascend concludes that fugitive emissions will not increase as a result of this project.

#### 3.1 ADIPIC ACID - SYNTHESIS AND REFINING (EU 002/090)

As stated previously Adipic Acid solution is produced when a ketone and alcohol mixture (KA, cyclohexanone/cyclohexanol) is oxidized with nitric acid. Emissions from EU-002 result from the reaction/refining operations and consist of NO<sub>x</sub>, CO, VOC and PM. A control system including thermal reduction unit TRU/SCR I and SCR II (Backup SCR) is employed to reduce emissions of CO VOC, and NO<sub>x</sub>.

Ascend is proposing to increase the permitted annual capacity for adipic acid production from 850 million pounds adipic acid (MAR) to 930 MAR based on a 12 month rolling average. This production rate will be achieved with greater emphasis on minimizing equipment down-time and enhanced management of the unit operation cycle times associated with the process. As such, Ascend has the ability to produce greater than the currently permitted 850 MAR adipic acid without increasing the currently permitted 92,000 lbs/hr KA feed rate to the unit.

The emission calculations presented to demonstrate PSD regulatory applicability employ the comparison of Baseline Actual emissions to Projected Actual emissions methodology including a demand growth production rate equivalent to 850 MAR per 62-210.200(244)(c) F.A.C. for all regulated pollutants. For this project demand growth excluded emissions are based on 154 MAR for CO and NO<sub>x</sub> and 98 MAR for VOC and PM/PM<sub>10</sub>. Table 2 presents baseline emission estimates for EU-002 based on data reported for the Annual Operation Report (AOR). Table 3 presents estimated projected actual emissions from EU-002 including consideration of demand growth. All emission

calculations are based on emission factors that are directly measured and others which are calculated by use of EPA AP-42 emission factors for adipic acid manufacturing. Startup, Shutdown and Malfunction (SSM) emissions will not change as a result of this project as there should be no increase in the number of startups, shutdowns or malfunctions. The Annual Operating Report has included SSM emissions and all SSM emissions will continue to be included in the AOR.

Adpic Acid Production, EU-002 employs an emission control system including the TRU/SCR I and Backup SCR. The emission control system will be operated to maintain NOx emission equal to those associated with the production of 850 MAR on an annual basis. As a result of exclusion of emissions associated with demand growth up to 850 MAR, the project will not increase NOx emissions from EU-002 beyond any increased utilization due to product demand growth. The emission control system can achieve increased emission control necessary to maintain emissions equivalent to 850 MAR by one of two ways as follows:

1. Adjust the operation of the TRU by combusting the NOx off gas to a lower level. The TRU controls NOx emissions by burning the off gas in a fuel rich environment. Should additional destruction be required, SCR I will be operated to further reduce the off gases from the TRU.
2. Operation of the Backup SCR (SCR II) at lower emission set points required for compliance.

Ascend proposes to include an annual emission limit on NOx from EU-002 equal to 585 TPY, on a 12-month rolling average, to avoid a Prevention of Significant Deterioration (PSD) significant increase in emissions. This limit results from reducing the projected NOx emissions at 850 MAR by 58 tpy to account for ancillary NOx emissions associated with this project. No change is proposed to the NOx concentration limit of 500 ppm, on a 30-day rolling average.

### **3.2 ANCILLARY EMISSION IMPACTS**

Ascend has taken a conservative approach to evaluating potential upstream/downstream ancillary emission impacts associated with the proposed 930 MAR limit. Specifically, emissions associated with an 80 MAR increase have been calculated for the following areas:

#### **3.2.1 UPSTREAM ANCILLARY EMISSION IMPACTS**

Nitric Acid Unit (EU-042) –Nitric acid is produced in a synthesis process, ammonia is oxidized in the presence of a catalyst to form NOx, which is then converted to nitric acid by a reaction with water.

The nitric acid plant has a maximum permitted operating rate equal to 1,500 tons per day. NOx emissions are controlled by process operating conditions and use of an SCR. The emission control system will be operated to maintain NOx emission equal to those associated with the production of 850 MAR on an annual basis. As a result of exclusion of emissions associated with demand growth up to 850 MAR, the project will not increase NOx emissions from EU-042 beyond any increased utilization due to product demand growth (360 tpy maximum), see Table 1.

Historically, Ascend has from time to time purchased nitric acid to meet the facility demand. The option of purchasing additional nitric acid will not change as a result of this project.

The nitric acid production process is a net steam exporter. Project steam increases have been credited for increased waste heat recovery steam generation. The project will not result in operation of the Nitric Acid Plant beyond the currently permitted capacity.

Halcon Unit (EU-020) – To estimate worst case emissions for regulatory applicability review, emissions are based on the conservative assumption that Halcon will operate at the maximum operating rate. This is consistent with the original basis for 850 MAR in adipic acid where Halcon was operated at maximum rates to produce the majority of the KA required with supplemental KA being purchased. Ascend produces KA through two processes, Halcon and via Area 480. Production of KA through Halcon generates higher emissions than Area 480 and as a result the worst case emissions are generated by assuming the production of KA is maxed out through Halcon with the remaining being supplied by Area 480. *Max for both units*

As a result of exclusion of emissions associated with demand growth up to 850 MAR, the project will not increase emissions from EU-020 beyond any increased utilization due to product demand growth. No physical changes are needed in this unit and no permit changes are requested for EU-020.

Area 480 (P2K) Unit (EU-088) – The minor emission increases at P2K resulting from the need for additional KA in EU-002 are included in the ancillary emission increase assessments, See Table 4. Should more P2K-KA be produced for adipic acid manufacturing than accounted for in these emission calculations, it will be at the expense of KA produced at the higher emission rate Halcon Unit, as a result, overall emissions will be lower. Emissions from increased steam demand in this unit are included in the assessment. No physical changes are needed in this unit and no permit changes are requested for EU-088. *Lower?*

Hydrogen Unit (EU-049) –Hydrogen is used in the P2K unit as well as the production of hexamethylene diamine (HMD). Emissions associated with increased hydrogen demand for P2K-KA production and downstream HMD production (used in the ancillary emission evaluation of increased nylon production) are calculated based on production at this unit, see Table 4. Should liquid vaporization be used to meet a portion of the hydrogen demand, emissions would be less than stated. No credit was taken for export of steam from waste heat recovery in this area. No physical changes are needed in this unit and no permit changes are requested for EU-049.

### 3.2.2 DOWNSTREAM ANCILLARY EMISSION IMPACTS

Emission impacts from downstream activities have been assessed as if 100% of the additional 80 MAR of adipic acid produced was either dried or 100% of the 80 MAR used to produce nylon. This results in a worst case assessment on a pollutant by pollutant basis. Historically 40% to 60% of adipic acid produced has been sold as dry adipic acid. Emission estimates for adipic acid processed 100% to dried or 100% to nylon production are presented in Tables 5 and 6, respectively. A discussion of each production route is presented as follows.

Adipic Acid Drying and Loading – Worst case emission assumptions are used in the calculation of emission changes due to adipic acid drying and loading. To produce a conservative evaluation, a higher proportion of adipic acid was sent to the EU-061, EU-062, EU-063 and EU-064 dryers than historical usages. This results in using higher drying emissions in the assessment than would actually be expected. Similarly, the loading emission assessment assumed that all of the materials from these four dryers were bulk loaded into railcars at EU-050 rather than in the lower emitting boxing and bagging operation. Historically the dryer output is split between both loading operations. This results in conservatively overestimating emissions from loading operations. Emission from steam used in the dryers is included in the project emission assessment. No physical changes are needed in these emission units and no permit changes are requested.

-633-AC

Nylon Polymerization (EU-081, EU-082) – The emission assessment includes increases in VOC and PM emissions from direct nylon production. Emissions from increased vaporization of thermanol at the 8 Vaporizers and increased steam usage for nylon polymerization are reflected in the application. In addition to these emissions from nylon polymerization, emissions from additional HMD

production, additional hydrogen used to produce the HMD as well as additional steam usage for HMD production are reflected in this application. No physical changes are needed in these units and no permit changes are requested due to nylon production. 033-AC

Increased emissions resulting from increased steam demand are assessed using Boilers 4, 5 and 6 on natural gas as the source of the increased steam, see Tables 5 and 6. As the project does not have any changes in these units, no permit changes are required.

### 3.2.3 MISCELLANEOUS ANCILLARY EMISSION IMPACTS

The increase in production of adipic acid leads to increased amounts of byproducts purged from the unit. These byproducts are purified and sold or further reacted to make dimethyl esters of the dibasic acid byproducts. Emissions from steam and production are included in the evaluation of ancillary emission increases.

#### 4.0 RULE APPLICABILITY

EUs 002 and 090, Area II Adipic Acid Expansion, are subject to the following New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations:

Applicable Federal Regulations:

NSPS Title 40 of the Code of Federal Regulation (40 CFR) 60 Subpart A, General Provisions

NSPS 40 CFR 60 Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry

NSPS 40 CFR 60 Subpart NNN, Standards of Performance of Volatile Organic Compounds (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI)

Distillation Operations:

- 60.660 Applicability and designation of affected facility.
- 60.661 Definitions.
- 60.662 Standards.
- 60.663 Monitoring of emissions and operations.
- 60.664 Test methods and procedures.
- 60.665 Reporting and recordkeeping requirements.
- 60.666 Reconstruction.
- 60.667 Chemicals affected by subpart NNN.
- 60.668 Delegation of authority.

NESHAP 40 CFR 63, Subpart FFFF, National Emission Standards for Miscellaneous Organic Manufacturing

The Project will meet the requirements of the applicable NSPS/NESHAP regulations.

#### 4.1 PSD REVIEW

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit

issued. EPA has approved Florida's State Implementation Plan (SIP), which contains PSD regulations; therefore, PSD approval authority has been granted to the FDEP.

In 2006, Florida adopted the Federal NSR/PSD reform promulgated on 12/31/2002. The following is taken from the Florida Administrative Code.

**“F.A.C. 62-210.200 (244) “Projected Actual Emissions”** – The maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. One year is one 12-month period. In determining the projected actual emissions, the Department:

(a) Shall consider all relevant information, including historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans or orders, including consent orders; and

(b) Shall include fugitive emissions to the extent quantifiable and emissions associated with startups and shutdowns; and

(c) Shall exclude that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions and that are also unrelated to the particular project including any increased utilization due to product demand growth; or

(d) In lieu of using the method set out in paragraphs (a) through (c) above, may be directed by the owner or operator to use the emissions unit's potential to emit, in tons per year.”

The PSD applicability analysis based on past actual and future projected actual emissions is presented in Table 1. There are no project emission increases of regulated pollutants above PSD “significance” levels. Additionally, this project is not linked or enabled with other projects in the contemporaneous period. Thus, no contemporaneous credible increases or decreases are necessary to be considered. The project is therefore not a major modification under PSD regulations since the difference between baseline actual emissions including consideration of demand growth and projected actual emissions do not exceed the significant emission levels.

**TABLES**



Table 1. Emission Increases Based on Past Actual and Future Projected Actual Production Rates, Upstream and Downstream Emission Increases, and Projected Demand Growth

Pollutant	EU-002 Future Projected Actual Emission - Adipic Acid Production (930 MAR) (TPY)	-	EU-002 Past Actual Emissions Adipic Acid Production (see Table 2) (TPY)	-	EU-002 Demand Growth Emissions Excluded (see Table 3) (TPY)	+	Worst-Case Emission Change from Upstream Sources (see Table 4) (TPY)	+	Worst-Case Emission Change from Downstream Sources (see Tables 5 & 6) (TPY)	=	Project Emission Increase (TPY)	PSD Review Thresholds (TPY)	Trigger PSD Review (Y/N)
CO	18.0		12.7		4.27		0.30		11.5		12.79	100	N
NOX	585.0		524.9		117.10		5.05		52.9		0.96	40	N
VOC	116.8		94.4		12.39		3.13		21.01		34.13	40	N
PM/PM10	24.3		19.7		2.60		0.42		9.6		12.00	15	N
SO2	0.0		0.0		0.00		0.12		0.2		0.30	40	N

Note: Demand Growth Excluded Emissions (850 - 696 = 154 MAR for CO and NOx, )  
[62-210.200(247)(c)] (850 - 752 = 98 for VOC and PM)

PM2.5 projected emission increase is less than 6.7 tpy.

Source: Ascend, 2010.

**Table 2. Past Actual CO, NOx, VOC and PM/PM10 Emissions from EU-002 Sources Based on AOR Data**

EU 002 Adipic Acid (Synthesis & Refining)					Baseline			
Year	CO (TPY)	NOX (TPY)	VOC (TPY)	PM/PM10/PM2.5 - Synthesis and Refining* (TPY)	24 Month Max (TPY)			
					CO	NOx	VOC	PM/PM10
2009	9.8	398.5	73.2	14.574				
2008	12.2	445.1	84.6	17.749				
<b>2007</b>	12.5	506.9	<b>100.7</b>	<b>20.985</b>				
<b>2006</b>	11.5	522.4	<b>88.2</b>	<b>18.41</b>			94.4	19.7
2005	11.7	506.8	88.6	18.516				
2004	10.2	425.3	93.4	19.77				
<b>2003</b>	<b>13.1</b>	<b>531.4</b>	87.1	18.305				
<b>2002</b>	<b>12.4</b>	<b>518.4</b>	87.8	18.404	12.7	524.9		
2001	9.2	333.4	77.5	16.114				

Note: New NOx control systems started in year 2000, year excluded.

MAR = million pounds of adipic

\*All particulate assumed to equal PM2.5 or less.

Source: Ascend, 2010.

Table 3. Future Projected Actual Emissions, and Projected Demand Growth Exclusion Emissions for EU-002

Pollutant	EU-002 Future Projected Actual Emission - Adipic Acid Production (930 MAR)	Baseline Actuals including Demand Growth Emissions (Emissions at 850 MAR) (TPY)	Baseline Actuals From Table 2 (TPY)	Demand Growth Emissions Excluded (850 MAR - Baseline MAR, Per Pollutant), see Note.
CO	18	17.0	12.70	4.27
NOX*	585	642.0	524.90	117.10
VOC	116.8	106.8	94.40	12.39
PM/PM10/PM2.5	24.3	22.3	19.70	2.60
SO2	0	0.0	0.00	0.00

Note: Demand Growth Excluded Emissions (850 - 696 = 154 MAR for CO and NOx, )  
 [62-210.200(247)(c)] (850 - 752 = 98 for VOC and PM)

\* Adpic acid control system will be operated to maintain NOx levels equivalent to 850 MAR minus ancillary increases.

Source: Ascend, 2010.

**Table 4. Ancillary Emission Increases as a Result of Upstream Impacts of Increased Adipic Acid Production**

Source	Project Emissions Change (TPY)					Emission Comment / Basis
	CO	NOX	PM/PM10	SO2	VOC	
Adipic Reaction/Refining Steam*	0.53	3.20	0.15	0.13	0.13	28,737.5 MMBtu annually at Boilers 4,5,6
Nitric NOx credit for additional steam generated (waste heat recovery)	-0.80	-5.66	-0.25	-0.02	-0.18	-67,952.9 MMBtu annually (equivalent at Boilers 4,5,6)
Area 480 (P2K) Steam Increase*	0.44	3.11	0.14	0.01	0.10	37,287.5 MMBtu annually at Boilers 4,5,6
Nitric Acid Unit	NA	0	NA	NA	NA	
Halcon Unit (see application Text)						
Area 480 (P2K)	0.08	0.81	0.06	NA	2.80	Required Increase and Emission Factor based on 2007/2008 AOR emissions and production
Hydrogen Unit	0.04	3.59	0.32	0	0.27	Required Increase and Emission Factor based on 2009 AOR emissions and production
<b>EMISSIONS INCREASES</b>	<b>0.30</b>	<b>5.05</b>	<b>0.42</b>	<b>0.12</b>	<b>3.13</b>	

Source: Ascend, 2010.

\*Net Steam emissions based on Boilers No. 4, 5, and 6. AP-42 Section 1.4.

Table 5. Ancillary Emission Increases as a Result of Downstream Impacts of Increased Adipic Acid (Route 1 - 100% Dry Adipic)

Source	Project Emissions Increases (TPY)					Emission Comment / Basis
	CO	NOX	PM/PM10	SO2	VOC	
Adipic Drying (75% thru Rotary Dryers)	NA	NA	7.98	NA	NA	80 MAR, 75% at Rotary Dryer, 25% at Bepex Dryer, 2009 AOR emission Factors
Adipic Loading (75% thru Bulk Loading #1)	NA	NA	1.26	NA	NA	80 MAR, 75% at Bulk Loading #1, 25% at Bulk Loading #2, 2009 AOR emission Factors
Net Steam Changes (Adipic Drying)*	0.27	1.94	0.09	0.01	0.33	22,295.86 MMBtu annually at Boilers 4,5,6
AGS/DME Emissions (including steam)	0.82	5.78	0.26	0.02	0.91	69,401.9 MMBtu annually at Boilers 4,5,6; 0.7 tons VOC annually at DME
<b>EMISSIONS INCREASES</b>	<b>1.09</b>	<b>7.72</b>	<b>9.59</b>	<b>0.03</b>	<b>1.24</b>	

Source: Ascend, 2010.

\*Net Steam emissions based on Boilers No. 4, 5, and 6. AP-42 Section 1.4. Dryer emissions are estimated to be 34% PM2.5

Table 6. Ancillary Emission Increases as a Result of Downstream Impacts of Increased Adipic Acid Production (Route 2 - 100% Nylon)

Source	Project Emissions Increases (TPY)					Emission Comment / Basis
	CO	NOX	PM/PM10	SO2	VOC	
Nylon	NA	NA	2.10	NA	13.56	VOC: Production Increase and Emission Factor from 2006 AOR emission and production PM based on CP conversion permits
Nylon - Theminol	6.11	7.27	0.14	0.04	0.40	145,964.2 MMBtu annually at Vaporizers 1 - 8, based on 2008 usages
Net Steam Changes (Nylon & HMD Steam)*	4.48	31.76	1.42	0.11	1.03	381,109.9 MMBtu annually at Boilers 4,5,6
HMD	NA	NA	NA	NA	4.50	Required increase and Emission Factor based on 2007/2008 AOR emissions and
Hydrogen (On-Site Generation)	0.09	8.11	0.73	0.00	0.61	Required Increase and Emission Factor based on 2009 AOR emissions and production
AGS/DME Emissions (including steam)	0.82	5.78	0.26	0.02	0.91	69,401.9 MMBtu annually at Boilers 4,5,6; 0.7 tons VOC annually at DME
<b>EMISSIONS INCREASES</b>	<b>11.50</b>	<b>52.92</b>	<b>4.64</b>	<b>0.18</b>	<b>21.01</b>	

Source: Ascend, 2010.

\*Net Steam emissions based on Boilers No. 4, 5, and 6. AP-42 Section 1.4.