# Florida Department of Environmental Protection

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary


## DRAFT PERMIT

**PERMITTEE**

ArrMaz Custom Chemicals, Inc.
4800 State Road 60 East
Mulberry, FL 33860

Authorized Representative:
Ms. Jacalyn McCarthy, EHS Director

Air Permit No. 1050097-024-AC
Permit Expires: 04/01/2014
Site Name: ArrMaz Custom Chemicals – Mulberry Facility
Minor Air Construction Permit
Project Name: Modification of Construction Permits 1050097-021-AC and 1050097-023-AC

This is the final air construction permit, which authorizes the following: increase in size of the existing reaction kettle Nos. 4 and 5 (Emissions Unit 006); increase of the maximum permitted sulfur input rate to the sulfonation unit (Emissions Unit 001) to 350 lb/hr; extension of the expiration date of construction permit 1050097-021-AC to allow construction of a new reaction kettle (No. 1); and elimination of the requirement to record scrubber pressure drop for reaction kettle Nos. 1, 2, 4, and 5 (condenser outlet temperature will be recorded instead). Annual visible emissions testing requirement for the sulfonation unit is also being eliminated as a part of this project. The proposed work will be conducted at ArrMaz Custom Chemicals – Mulberry Facility (Standard Industrial Classification No. 2869). The facility is located in Polk County at 4800 State Road 60 East in Mulberry, Florida. The UTM coordinates are Zone 17, 408.3 km East, and 3085.7 km North. As noted in the Final Determination provided with this final permit, no changes or only minor changes and clarifications were made to the draft permit.

This final permit is organized by the following sections:

Section 1. General Information

Section 2. Administrative Requirements and Facility-wide Specific Conditions

Section 3. Emissions Unit Specific Conditions

Section 4. Appendices

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

This air pollution permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Hillsborough County, Florida
*DRAFT*

_____ _____

Cindy Zhang-Torres, P.E. Effective Date
Air Permitting Manager
Southwest District

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination, the Final Permit and the Appendices) was sent by electronic mail (or a link to these documents made available electronically on a publicly accessible server) with received receipt requested before the close of business on _____ to the persons listed below.

Ms. Jacalyn McCarthy, EHS Director
ArrMaz Custom Chemicals, Inc.
jmccarthy@am-cc.com

Mr. Steve Basarab, EHS Manager
ArrMaz Custom Chemicals, Inc.
sbasarab@am-cc.com

Mr. Lawrence Maron, P.E., Principal Consultant
S&ME, Inc.
lmaron@smeinc.com

Mr. Jim Estler, President
Clean Air Consulting, Inc.
estlerj@aol.com

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

*DRAFT*

_____ _____

(Clerk) (Date)

## FACILITY AND PROJECT DESCRIPTION

### ArrMaz Custom Chemicals, Inc.

This is a chemical manufacturing facility that stores, handles, and processes primarily tall oils, tall oil fractions, tall oil derivatives, animal or vegetable fatty acids, organic acids, amines, petroleum distillates or derivatives, and mixtures thereof.

The existing facility consists of the following emissions units.

| Facility ID No. 1050097 | |
|---|---|
| ID No. | Emission Unit Description |
| 001 | Sulfonation Unit |
| 003 | 500 HP Steam Boiler (NSPS) |
| 006 | Reaction Kettles |

### Project Description and Affected Emission Units

ArrMaz Custom Chemicals, Inc. has requested the following:

- Increase the size of the existing reaction kettle Nos. 4 and 5 (Emissions Unit 006). It has been determined that these reactors are larger than they were previously listed at. Kettle No. 4 has a maximum fill capacity of 10,438 gallons (previously listed at 10,000 gallons), while kettle No. 5 has a maximum fill capacity of 11,709 gallons (previously listed at 10,000 gallons).
- Increase the maximum permitted sulfur input rate to the sulfonation unit (Emissions Unit 001) from 300 lb/hr to 350 lb/hr since the new sulfonation reactor, whose construction was allowed under construction permit 1050097-023-AC, allows for a greater sulfur input rate than initially thought.
- Extend the expiration date of construction permit 1050097-021-AC to allow construction of a new reaction kettle (No. 1).
- Elimination of the requirement to record scrubber pressure drop for reaction kettle Nos. 1, 2, 4, and 5 (Emissions Unit 006) since this parameter is not a valid indicator of proper scrubber operation (for prevention of objectionable odors). Instead, condenser outlet temperature will be recorded and required to be maintained below 200ºF.

Annual visible emissions testing requirement for the sulfonation unit is also being eliminated as a part of this project since this unit is only subject to the general visible emissions standard (20%) and as such no routine testing is required.

This project will modify the following emissions units.

| Facility ID No. 1050097 | |
|---|---|
| ID No. | Emission Unit Description |
| 001 | Sulfonation Unit |
| 006 | Reaction Kettles |

***NOTE:*** *Please reference the Permit No., Facility ID, and Emissions Unit ID in all correspondence, test report submittals, applications, etc.*

**Exempt Emission Units/Activities**

- Liquid Phase Heaters (4) (Emissions Unit 002) and 300 HP Steam Boiler (Emissions Unit 005), exempt from permitting pursuant to Rule 62-210.300(3)(a)34., F.A.C.
  Emissions Unit 002 consists of four hot oil heaters serving the reaction kettles in a hot oil system loop. Three of the heaters are Heatec HCS-175, each rated at 2.0 mmBtu/hr, while one heater is Heatec HC-200, rated at 2.0 mmBtu/hr. Heaters are fired with natural gas as the primary fuel and No. 2 oil with a maximum sulfur content of 0.5% by weight as a standby.
  Emissions Unit 005 consists of a Clark 300 HP process steam boiler with a maximum design heat input rate of 12.6 mmBtu/hour, equivalent to 90 gallons/hour of new No. 2 fuel oil or 12,500 $ft^3$/hour of natural gas usage. Natural gas is the primary fuel and new No. 2 fuel oil with a maximum sulfur content of 0.5% by weight is the backup fuel.
  In accordance with Rule 62-210.300(3)(a)34.g., F.A.C., the collective annual amount of fuel burned by the boiler and heaters listed above shall not exceed 375 million standard cubic feet of natural gas or 290,000 gallons of fuel oil (if burning only one type of fuel); if burning more than one type of fuel, the equivalent collective annual amount of fuels burned is limited according to Rule 62-210.300(3)(a)34.h., F.A.C.

  *{Permitting Note: 300HP Steam Boiler is not subject to NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, since construction and operation was prior to June 9, 1989.}*

- Storage Tanks 90 and 91 (Emissions Unit 007) and Storage Tank Farm (Emissions Unit 009), exempt from permitting pursuant to Rule 62-210.300(3)(b)1., F.A.C. These emissions units are used for the storage of tall oil, tall oil fractions, tall oil derivatives, animal or vegetable fatty acids, organic acids, amines, petroleum distillates, or derivatives and mixtures thereof. They consist of two large 100,000 gallon (U.S.) capacity storage tanks (EU 007), and multiple storage tanks of various sizes (EU 009). These tanks are a source of volatile organic compounds (VOC); however, emissions are minimal due to the low vapor pressure of the materials stored. Additionally, VOC emissions are reduced by equipping all tanks with fixed roofs, submerged filling capabilities and proper work practices to minimize spills, etc.

- A 500-gallon (3,500 pounds/batch, typical) Research and Development (R & D) reaction kettle, considered exempt from permitting due to its low capacity and infrequent use pursuant to Rule 62-210.300(3)(b), F.A.C.

## FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is not a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is not a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- This facility is a synthetic non-Title V source for sulfur dioxide ($SO_2$).

## PERMIT HISTORY/AFFECTED PERMITS

Modifies and replaces permits 1050097-021-AC and 1050097-023-AC. Cross reference with permit 1050097-025-AO, which will be issued in the near future.

## SECTION 2. ADMINISTRATIVE REQUIREMENTS AND FACILITY-WIDE SPECIFIC CONDITIONS (DRAFT)

1. Permitting Authority: The permitting authority for this project is the Florida Department of Environmental Protection (Department), Southwest District's Air Resource Management Section. The Southwest District's mailing address and phone number is:

   Florida Department of Environmental Protection
   Southwest District Office
   Air Resource Management Section
   13051 North Telecom Parkway
   Temple Terrace, Florida 33637-0926
   Telephone: 813-632-7600

   All documents related to applications for permits shall be submitted to the above address.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office's Air Resource Management Section (see above mailing address and phone number).

3. Appendices: The following Appendices are attached as part of this permit:

   a. Appendix A. Citation Formats and Glossary of Common Terms;
   b. Appendix B. General Conditions;
   c. Appendix C. Common Conditions; and
   d. Appendix D. Common Testing Requirements.

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time.
   [Rule 62-4.080, F.A.C.]

6. Modifications: Unless otherwise exempt by rule, the permittee shall not initiate any construction, reconstruction, or modification at the facility and shall not install/modify any pollution control device at the facility without obtaining prior authorization from the Department. Modification is defined as: Any physical change or changes in the method of operations or addition to a facility that would result in an increase in the actual emissions of any air pollutant subject to air regulations, including any not previously emitted, from any emissions unit or facility.
   [Rules 62-210.200 - Definition of "Modification" and 62-210.300(1)(a), F.A.C.]

7. Annual Operating Report: On or before **April 1** of each year, the permittee shall submit a completed DEP Form 62-210.900(5), "Annual Operating Report for Air Pollutant Emitting Facility" (AOR) for the preceding calendar year. The report may be submitted electronically in accordance

with the instructions received with the AOR package sent by the Department, or a hardcopy may be sent to the Compliance Authority.
[Rule 62-210.370(3), F.A.C.]

8. Application for Non-Title V Air Operation Permit: This permit authorizes modification of the permitted emissions unit(s) and initial operation to determine compliance with Department rules. A Non-Title V air operation permit is required for continued operation of the permitted emissions unit(s). The permittee shall apply for a Non-Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after reaction kettle No. 1 commences operation. To apply for a Non-Title V air operation permit, the applicant shall submit the following:

    a. the appropriate permit application form *(see current version of Rule 62-210.900, F.A.C. (Forms and Instructions), and/or FDEP Division of Air Resource Management website at: http://www.dep.state.fl.us/air/)*;

    b. the appropriate operation permit application fee from Rule 62-4.050(4)(a), F.A.C.; and

    c. copies of the most recent two months of records/logs specified in Specific Condition No. B.4.

    The application shall be submitted to the Permitting Authority.

    [Rules 62-4.030, 62-4.050, and 62-4.220, F.A.C.]

## A. EU 001 – Sulfonation Unit

This section of the permit addresses the following emissions unit.

| ID No. | Emissions Unit Description |
|---|---|
| 001 | In this emission unit, sulfur is burned to produce sulfur dioxide ($SO_2$). The $SO_2$ is then oxidized to sulfur trioxide ($SO_3$) in a catalyst bed. In the production of organic sulfonate products, $SO_3$ gas generated from the catalyst bed is passed through one of the two reactors in contact with various organic liquids. The reactor then discharges into a cyclone separators system which consists of two process cyclones connected in series. The cyclones are considered process equipment in this emission unit and are used to recover liquid from the reactor discharge. The liquid stream exiting the cyclone system is subsequently neutralized to produce organic sulfonate products, while the gas stream exiting the cyclone system is vented through either the "Venturi Scrubber System" or the "$SO_2$ Absorber/Scrubbing System". When the gas stream is vented through the "Venturi Scrubber System", the gas passes through the Venturi-Cyclonic Scrubber, then through the final mist eliminator and stack, to the atmosphere. When the gas stream is vented through the "$SO_2$ Absorber /Scrubbing System", the gas first passes through a liquid separator (filled with 2" ceramic saddles as a packing media) and then through a mist eliminator (located upstream of the $SO_2$ Absorber). The gas stream exiting the mist eliminator then passes through the $SO_2$ Absorber (packed tower), then through the final mist eliminator and stack, to the atmosphere.<br><br>During startups and shutdowns, when organic sulfonate products are not being produced, the $SO_3$ gas generated from the catalyst bed goes directly to a sulfuric acid scrubber and produces sulfuric acid. The small amount of sulfuric acid that is produced (and given away) is to prevent emissions. Therefore, the production of sulfuric acid does not meet the definition of a "sulfuric acid production unit" in 40 CFR 60.81(a) and is not subject to 40 CFR 60 Subpart H – Standards of Performance for Sulfuric Acid Plants. The gas stream from the sulfuric acid scrubber is vented through the "$SO_2$ Absorber/Scrubbing System". |

### PERFORMANCE RESTRICTIONS

A.1. Permitted Capacity: The maximum sulfur input rate shall not exceed 350 pounds/hour, averaged daily.
[Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

*{Permitting Note: The rate was requested in air construction permit application received on 08/01/11}*

A.2. Hours of Operation: The hours of operation are not limited (8,760 hours per year).
[Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

### RECORDS AND REPORTS

A.3. Daily and Monthly Logs: To demonstrate compliance with the sulfur input rate limitation of Specific Condition No. A.1., the permittee shall maintain the following records:

a. Facility name, facility ID No., emissions unit ID No., and date;
b. Daily average sulfur input rate in pounds/hour;
c. Daily average must be determined by one of the following methods:

*Manually* – Calculate the "Daily Average Sulfur Input Rate" by dividing the total quantity of sulfur feed input by total hours of operation for each day.

*Continuous Monitoring* – Calculate the "Daily Average Sulfur Input Rate" using continuous monitoring source data. Continuous monitoring source data used in the calculation must be derived from discrete data collected at constant intervals of either minutes or seconds. Interval duration shall not exceed 1 minute. The daily sulfur input rate data shall be maintained on the system for a minimum of 2 months and must also be made available to the Department for inspection upon request.

If the continuous monitoring recordkeeping option is selected, then the permittee shall also maintain the following monthly records:

d. Facility name, facility ID No., emissions unit ID No., and month and year;

e. Daily average sulfur input rate in pounds/hour and date for each day during the month.

All daily records shall be completed within ten (10) calendar days and all monthly records shall be completed by the end of the following month. All required records required shall be maintained at the facility for at least three years, unless otherwise noted, and be made available to the Department for inspection upon request.

[Rule 62-4.070(3), F.A.C.; Construction Permit 1050097-023-AC]

## B. EU 006 – Reaction Kettles

This section of the permit addresses the following emissions unit.

<table>
<tr><th>ID No.</th><th>Emissions Unit Description</th></tr>
<tr><td>006</td><td>
This emissions unit is used to produce fatty amino acids, glycol esters, and other products primarily used for the phosphate industry. It is also used to produce sulfurized crude tall oils. A summary of the reaction kettles and their maximum fill capacities is shown below:
<table>
<tr><th>Reaction Kettle No.</th><th>Capacity (gallons)</th></tr>
<tr><td>1 (new)</td><td>20,000</td></tr>
<tr><td>2 (existing)</td><td>6,500</td></tr>
<tr><td>4 (existing)</td><td>10,438</td></tr>
<tr><td>5 (existing)</td><td>11,709</td></tr>
</table>
Note: The permittee may elect to install a smaller capacity reactor for reaction kettle No. 1. The permittee has stated that reaction kettle No. 1 will have a capacity of 10,000, 15,000 or 20,000 gallons.
<br><br>
The kettles are batch operated with each batch averaging approximately 18 to 20 hours in duration during the production of the normal product line and approximately 3 to 4 hours in duration during the production of sulfurized crude tall oils. In addition to the reaction kettles, this emission unit includes several packed tower scrubbers, equipped with a mist eliminator. The scrubbers operate using either sodium hydroxide or sodium hypochlorite as the scrubbing liquid. This emission unit also includes a thermal oxidizer that has a design heat input rate of 4.0 mmBtu/hour and is fired with natural gas. The thermal oxidizer is used during the production of sulfurized crude tall oils to minimize the potential for objectionable odors.
<br><br>
Operations and controls of all equipment included in this emission unit are summarized below:
<br><br>
Reaction kettle No. 2 can be configured to produce either the sulfurized crude tall oil product line or the normal product line. When producing sulfurized crude tall oil, the vapors from kettle No. 2 vent through its condenser, then through a condensate collection tank, then through three scrubbers in series. Vapors exiting the final scrubber pass through a thermal oxidizer and out a stack to the atmosphere. When producing the normal product line, the vapors from kettle No. 2 vent through its condenser, then through a condensate collection tank, and then through a scrubber to the atmosphere.
<br><br>
Reaction kettle No. 4 is configured to produce the normal product line. Vapors from kettle No. 4 vent through its condenser, then through a condensate collection tank, and then finally through its dedicated scrubber to the atmosphere.
<br><br>
Reaction kettle No. 5 is configured to produce the normal product line. Vapors from kettle No. 5 vent through its condenser, then through a condensate collection tank, and then finally through a scrubber to the atmosphere.
<br><br>
Reaction kettle No. 1 will likely be configured to produce the normal product line. Vapors from kettle No. 1 will vent through its condenser, then through its condensate collection tank, and then through its dedicated scrubber to the atmosphere.
</td></tr>
</table>

## B. EU 006 – Reaction Kettles

### PERFORMANCE RESTRICTIONS

B.1. Hours of Operation: The hours of operation are not limited (8,760 hours per year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

B.2. Operation Limitations: Reaction kettle Nos. 1, 2, 4 and 5 may operate simultaneously. To ensure proper management of reactor kettle exhaust vapors, the following operation conditions shall be maintained:

*Scrubber Operation* – All scrubbers used to control emissions from reaction kettles shall be equipped with mist eliminators and properly maintained and operated. To ensure proper operation of the scrubbers, the following operating conditions shall be maintained during reaction kettle batch operations:

a. Scrubber liquid shall be sodium hydroxide or other solutions to be determined by the Review Procedure below;
b. Scrubber liquid minimum flow shall be maintained at or above 6 gallons per minute;
c. Scrubber liquid pH shall be maintained between 8 and 12.5, or as determined by the chemistry of kettle vapors or scrubber liquid (as per item a.);
d. Hourly average condenser outlet temperature shall be maintained below 200ºF. (*Note: A monitoring system will be used to calculate and display the temperature on a one-hour rolling average basis.*)

*Sulfurized Crude Tall Oil Production* – During the production of the sulfurized crude tall oils, the following operation procedures shall be followed:

e. Reaction kettles producing sulfurized crude tall oils must vent through the three scrubbers in series and the thermal oxidizer;
f. The thermal oxidizer shall have a minimum set point temperature of 1,550º F during the reaction of sulfur with crude tall oil.

*Review Procedure* – Emissions from the R & D reaction kettle are controlled by the same Southerland Associates packed tower wet scrubber that controls emissions from reaction kettle Nos. 2 and 5. In order to prevent objectionable odors, and in accordance with the process safety review proposed in Kenneth Given's letter dated December 14, 1993, a safety, environmental and mechanical review of the R & D reaction kettle, and each packed tower wet scrubber operation shall be instituted prior to the evaluation of any product class not previously processed. Records of the review shall be maintained on-site for a minimum of the most recent three (3) year period, and be made available to the Department upon request.

[Rule 62-4.070(3), F.A.C.; requested in letter received on 09/08/11]

### NOTIFICATION REQUIREMENTS

B.3. Notification of Operation Commencement: The permittee shall notify the Compliance Authority in writing of the date of commencing operation of reaction kettle No. 1, no later than fifteen (15) days after that date. Commencing operation means setting into operation of any emissions unit for any purpose.
[Rules 62-4.070 and 62-210.200, F.A.C., (Definition of Commence Operation)]

**RECORDS AND REPORTS**

B.4. Daily Records – Operating Parameters: To ensure proper operation of scrubbers and thermal oxidizer, the permittee shall monitor and record the following parameters:

a. Facility name, facility ID No., emissions unit ID No., and date;

b. For each reaction kettle batch operation, record prior to and at a minimum of once during kettle batch operations:

1) Reaction kettle number (1, 2, 4, or 5);

2) Product type (normal or sulfurized crude tall oil);

3) Identify scrubber(s) used to control the reaction kettle exhaust;

4) For each scrubber used to control reaction kettle exhaust, record:

a) Scrubber liquid (e.g., sodium hydroxide);

b) Scrubber liquid flow rate in gallons per minute;

c) Scrubber liquid pH;

d) Condenser outlet temperature (one-hour average);

c. If producing sulfurized crude tall oil, record the thermal oxidizer temperature every hour.

Daily records shall be completed within ten (10) calendar days. These records shall be maintained at the facility for at least three years, unless otherwise noted, and be made available to the Department for inspection upon request.
[Rule 62-4.070(3), F.A.C.; requested in letter received on 09/08/11 and electronic mail received on 10/03/11]

*{Compliance Note: The permittee has stated that all components necessary for the monitoring of hourly average condenser outlet temperature are currently not in place, but that the monitoring would be implemented within 60 days of the effective date of this permit.}*