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From: Barbara Cenalmor
Date: 9/21/07; 10/1/07; 10/9/07;10/26/07;12/27/07

**Technical Support Document**
**Hexcel Corporation**
Permit # V20602.R05

# 1. BACKGROUND

## 1.1 Applicant

This permit revision pertains to an existing honeycomb manufacturing facility located at 1214 West Gila Bend Hwy 84, Casa Grande, Arizona, upon a parcel also identified by Pinal County Assessor's Parcel # 503-46-021-D3. The SIC Codes are 2679 and 3469.

This source constitutes a major source, and operates under authority of a "Title V" unitary permit.

This technical support document only summarizes any changes made to the permit through this revision. Additional information may be found in the Technical Support Documents for previous versions of this permit.

This analysis reflects consideration of (at least) the following:

- Permit revision application received on April 17, 2007.
- Addendum received on May 4, 2007, e-mailed by David Lima. This addendum includes information on the oven fan-size change.
- E-mail from David Lima, received on June 21, 2007, summarizing the “Total” Potential Emissions of VOCs after the latest revisions approved for this facility.
- As requested by PCAQCD, Revised permit application which includes all previous addendums, received August 21, 2007.

## 1.2 Attainment Classification

The source is situated in an area classified as "attainment" for all pollutants.

## 1.3 Permitting History

The following is a list of Hexcel permits since 1992[1]:

| Permit # | Permit Type | Issue Date | Equipment/Change |
|---|---|---|---|
| 20008 | Operating | 8/14/92 | |
| 10043 | Installation | 9/27/93 | CNF Machine |
| A20422 | Operating | 1/18/94 | |
| A20422.R02 | Significant Revision? | Application withdrawn | 4 ovens, RTO, oil heater |
| A20422.R03 | Minor Revision | 10/9/01 | Diesel generator and diesel compressor |
| V20602.000 | Title V | 1/18/05 | Initial Title V permit |
| V20602.R01 | Minor Revision | 6/2/05 | Removes MACT MMMM from applicable requirements and adds DDDDD. |

[1] There are many installation permits issued before 1992, too many to list here.

| Permit # | Permit Type | Issue Date | Equipment/Change |
|---|---|---|---|
| V20602.R02 | Significant Revision | 2/13/06 | Includes requirements from MACT JJJJ and Compliance Plan |
| V20602.R03 | Minor Revision | 12/14/06 | Septum Core, Purge/Cure Ovens #22 and 23 |
| V20602.R04 | Minor Revision | 5/24/07 | Allows oven #23 to be operated as double oven |

### 1.4 Compliance History

Inspections are being regularly conducted at this facility to ensure compliance with its applicable permit conditions. Except as indicated in §3 of the permit, Hexcel is currently in compliance with the permit conditions cited in permit V20602.R04. The facility is inspected every fiscal year and the following inspection will take place before July, 2008. The following table summarizes the recent inspections that ave been conducted on the source:

| Inspection Date | Type of Inspection | Results |
|---|---|---|
| 5/17/06 | Annual compliance | In compliance |
| 10/4/06 | Annual compliance | In compliance |

## 2. PROCESS DESCRIPTION

### 2.1 General Process

The facility produces composite components and composite structures for a variety of applications, notably including the aerospace industry and various consumer products. The primary product is generically referred to as "honeycomb." The honeycomb material or "core" is typically bonded as a structural filler or web, sandwiched between facing sheets to form a stiff, strong and light-weight structural panel. Honeycomb-type structures also have unique energy-absorbing characteristics and are used as impact-absorbers on commercial aircraft as well as roadway maintenance trucks and other vehicles. Structural honeycomb and composite honeycomb panels constitute the primary products from the facility. The facility manufactures both metallic and nonmetallic cores. The facility also manufactures a variety of other linear, planar, and cubic composite materials for the aerospace and other industries.

### 2.2 Process Changes

2.2.1 RTO replacement

The main purpose for this revision is to replace the existing Combustion Engineering thermal oxidizer (RTO#1, 72,000 cfm) with a new one. This new system consists of two independent units of 50,000 cfm each, RTO #3 and RTO #4. This double system will ensure there is an element of redundancy that does not currently exist, as it will allow for planned maintenance activities without complete shutdown of the cure/dip process. This new system will also use natural gas as make-up fuel.

RTOs #3 and #4 will provide 30,000 cfm of additional VOC control capacity, which will enable expanded capture and control of existing dip room emissions.

Each of the oxidizers #3 and #4 are rated at 50,000 cfm. While the installation transition process will be relatively short (approximately 6 months), it will be completed in phases so that operations are disturbed only minimally. The phases will be:

- Phase 1: #3 will be installed to the east of existing RTO #1. Process duct work will be tied into RTO #3. Upon successful startup and break-in of RTO #3, a portion of the Dip room emissions will be routed to it for control, allowing for phased shutdown of RTO #1.

- Phase 2: The eastern beds of RTO #1 will be shutdown, disassembled and removed , thus providing room for installation of RTO #4. The western two beds of RTO #1 will continue to operate and control Dip room emissions along with RTO #3.

- Phase 3: RTO #4 will be installed within a footprint overlapping the location of the recently removed eastern beds of RTO #1. Ductwork will be prepared for final tie-in, which includes capturing VOC emissions from the dip room described in the "Dip Room Capture Enhancements" below. Upon successful startup and break-in of RTO #4, these Dip room process emissions will be routed to it for control.

- Phase 4: Upon successful transfer of the Dip room process emissions to new RTOs #3 and #4, RTO #1 will be shutdown, disassembled and removed.

### 2.2.2 Dip Room Capture Enhancements

For purposes of this discussion, the "dip room" includes operations within the actual dip room, the ovens accessed from the dip room, and the capture, make-up-air and ventilation systems for the dip room, the equipment within the dip room, and the ovens. A schematic of a volumetric balance for the dip room can be found in the application material for Revision 'R05. With respect to dip room emissions, the existing capture and control system operates in parallel with a ventilation exhaust system. Fan-driven systems provide make-up air.

Given that the product processing occurs on a batch basis, multiple operations are underway at any given time, the individual oven control systems provide for planned but intermittent bypass of dip room emissions to the atmosphere, and the ventilation system is independently configured to evacuate the dip room in order to minimize employee-exposure to emissions, any characterization of emission capture from within the dip room represents a statistical norm rather than a discrete quantity. Under this revision, the operator proposes to affirmatively control dip room emissions by capturing all emission streams. That includes capturing emissions from the following vents that are currently uncontrolled:

- Emissions from dip room vents 411-1 through 411-5, the thru-wall vents.

- Exhaust from the header system which provides make up air to the ovens. Currently when there is no demand for make-up air for the purge/cure ovens, pressure relief louvers vent some or all the air collected from the floorsweeps to the atmosphere.

- Emissions from the Blow-Out Rack (Stack #417). The blow-out rack is used for drying the honeycomb blocks after dipping them in the dip tanks. Emissions are fan-vented through a stack when blocks are drying. This fan is set on a timer to operate 2-3 minutes at a time, which is the length of time required to dry the blocks.

### 2.2.3 PAA Oven replacement

The Zone 1 oven on the PAA line will also be replaced as part of this revision. This old oven will be replaced by a natural gas fired oven with a 3 MMBtu/hr heating capacity. The old oven's capacity was 1 MMBtu/hr.

### 2.2.4 Fan exhaust capacity increase (Purge/Cure Ovens #17-21)

The exhaust fans for Purge/Cure ovens 17-21 (5 ovens) will be changed to higher capacity fans to reduce the oven cycle times by reducing the cool down times, and thus increase the number of cycles and blocks that an oven can run in a given amount of time. In order for the netted emissions to stay below the triggering threshold for PSD, this permit revision limits the increase of VOC emissions from the oven changes (including the addition of the new oven, as described below) to 24 tons per year. The increase in fan size is equivalent to adding the capacity of ½ oven, due to the shorter cycle times that will be achieved. Each new fan is rated at 10,000 cfm, but due to the different duct arrangements of each oven, actual airflow will vary, but is expected to be in the neighborhood of 5000-6000 cfm per oven. Modification of the exhaust fans does not affect how the oven emissions are directed to the RTO.

2.2.5 Addition of Purge/Cure Oven #24

Purge/Cure oven #24 will be another double oven, similar to oven #23. This will be an indirect-fired natural gas oven, with 4 burners each rated at 1.2 MMBtu/hr input.

**2.3 Administrative Changes** - Planned Shutdowns and Engineering Evaluations

This revision also approves an administrative change regarding the deviation reporting of the RTOs. The permit currently requires permittee to report any shutdown of the RTO as a deviation of the permit. Since Permittee does conduct "planned shutdowns" for required maintenance and repair, they've been reporting deviations in accordance to the permit, even though the operations routed to such RTO are also shutdown, or bypassed to another RTO during these maintenance and repairs.

With the installation of the new RTO system, which is made up of 2 separate units, the Permittee would like the flexibility to conduct "planned shutdowns" without causing reportable deviations. "Planned shutdowns" are defined in the permit to ensure that during these shutdowns of an RTO unit, emissions are either vented to the other RTO unit, or operations are stopped for the duration of the shutdown. This revision revises the language in the permit to require reporting only on deviations of the temperatures or pressure drops that occur when the oxidizer is operating and controlling emissions, and not during periods considered "planned shutdowns". The permit also requires records to be kept of such shutdowns.

## 3. EMISSIONS

### 3.1 VOCs and HAPs

The table in this section lists this facility's potential VOC and HAPs emission, based on continuous operation and utilization of existing, federally enforceable, controls.

Hexcel previously conducted a test in the dip room to determine capture efficiency. The results of this test showed a capture of 75%, lower than previously estimated. While Hexcel is still working on demonstrating that the capture of different pollutants is higher than 75%, in the meantime, 75% capture is being assumed for all calculations. After the changes approved by this revision are finished, the capture of emissions within the dip room will be increase to an estimated 83%, and therefore this permit revision 'R05 requires a performance test to demonstrate the capture efficiency. A table showing anticipated emissions with the new capture efficiency is included below in the "Changes in Emissions" section. Section 4.2.2 of this document discusses the capture efficiency demonstration required.

Also, due to the 75% capture results, this facility is still considered a major source of HAPS, mostly due to the phenol and formaldehyde emissions from the dip room. Hexcel is also working on demonstrating that their HAP emissions are (and have been)below the 10/25 tpy HAP thresholds.

The table below lists potential emissions as follows:

1) as disclosed in the original Title V permit application (12/6/02), assuming a 90% capture in the dip room;

2) after EPA's MEK de-listing[2] (12/19/05), assuming a 90% capture in the dip room;

[2] Local deregulation of MEK is pending.

3) after initial testing (May 2006) of the capture efficiency in the dip room indicates only a 75% capture;

4) after R01 (issued 6/25/05) (no emission changes);

5) after R02 (issued 2/13/06) (no emission changes);

6) after R03 (issued 12/14/06) (still assuming a 75% capture in the dip room);

7) after R04 (issued 5/24/07) (still assuming a 75% capture in the dip room);

8) after R05 (still assuming a 75% capture in the dip room)[3].

| **Pollutant** | **Tons per year** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1)** | **2)** | **3)** | **4)** | **5)** | **6)** | **7)** | **8)** |
| MEK | 56.59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ethyl Benzene | 0.7 | 0.7 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Formaldehyde | 2.13 | 2.13 | 2.74 | 2.74 | 2.74 | 3.26 | 3.41 | 3.79 |
| Methanol | 4.93 | 4.93 | 2.63 | 2.63 | 2.63 | 2.65 | 2.65 | 2.65 |
| MIBK | 0.83 | 0.83 | 0.72 | 0.72 | 0.72 | 0.73 | 0.73 | 0.73 |
| Phenol | 2.06 | 2.06 | 12.63 | 12.63 | 12.63 | 14.29 | 15.12 | 17.20 |
| Toluene | 0.90 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Xylene | 2.59 | 2.59 | 1.95 | 1.95 | 1.95 | 2.16 | 2.26 | 2.51 |
| **Total HAPs** | **70.73** | **14.14** | **21.63** | **21.63** | **21.63** | **24.05** | **25.13** | **27.83** |
| Benzyl alcohol | 4.73 | 4.73 | 14.59 | 14.59 | 14.59 | 16.53 | 17.50 | 19.93 |
| Aliphatic naphtha | 15.92 | 15.92 | 15.92 | 15.92 | 15.92 | 15.92 | 15.92 | 15.92 |
| Ethanol | 111.48 | 111.48 | 106.84 | 106.84 | 106.84 | 114.2 | 117.19 | 124.67 |
| Ethyl acetate | 3.12 | 3.12 | 3.12 | 3.12 | 3.12 | 3.12 | 3.12 | 3.12 |
| Isopropyl acetate | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| IPA | 13.49 | 13.49 | 51.12 | 51.12 | 51.12 | 57.84 | 61.2 | 69.60 |
| NMP | 11.82 | 11.82 | 21.94 | 21.94 | 21.94 | 25.65 | 26.71 | 29.36 |
| MEK | 0[4] | 56.59 | 56.59 | 56.59 | 56.59 | 56.59 | 56.59 | 56.59 |
| VOC (other) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.63 |
| **Total VOCs** | **232.22** | **232.22** | **292.68** | **292.68** | **292.68** | **314.83** | **324.29** | **350.57** |

[3] Permittee has been working on developing an alternative way to demonstrate capture in the dip room since the original test conducted in 2006 showed an average result of 75%. New results are expected in late 2007. The total emissions in column 8) do not reflect the decrease due to the dip room enhancements, and therefore do not show the "net" emissions decrease calculated in §4 of this document.

[4] MEK was still considered a HAP during this permit transaction, therefore it is listed at the top of the table. For the next column 2), MEK is listed as a VOC in the bottom of the page.

## 3.2. Changes in Emissions

### 3.2.1 RTO Replacement and Dip Room Improvements

The bulk of the emissions from the RTO will be of NOx and CO from the oxidation of VOCs captured in the Dip Room and Dip Cure Ovens.

The use of a larger capacity RTO does not represent a debottleneck for any process, since the capacity of the Dip Cure Ovens still limit the capacity, and the only way to increase capacity is by adding more ovens or increasing the fan size (see §3.2.3 below).

Permittee has calculated the potential emissions for the new RTO (from combustion):

| Pollutant | Potential Emissions (TPY) |
|---|---|
| NOx | 25 |
| CO | 23 |
| SOx | 0.2 |
| PM10 | 1.50 |
| VOC | 2.40 |

With the larger capacity RTO, Permittee will be capturing emissions from the dip room that were previously vented to the atmosphere. Using an airflow model created by the design engineering firm, M3 Engineering, Hexcel has calculated the increase in VOC capture in the diproom, and using the 75% capture efficiency recently tested for, as well as the control efficiency of the RTO of 95%, the potential VOC emission decrease is as follows:

| | Current State (TPY) | Final State (TPY) |
|---|---|---|
| Total VOC emitted from process | 1476 | 1476 |
| Total VOC to RTO | 1235 | 1283 |
| Uncombusted VOC through RTO (95% eff.) | 61 | 66 |
| Oven cool-down venting to atm.(increase due to more air being drawn into dip room, therefore more air vented during the cool-down portion of the oven cycles) | 88 | 127 |
| Vented VOC to atm. via exhaust and fugitive | 83 | 0 |
| Total VOC emissions to atm. | 232 | 193 |
| Percent Overall VOC Capture | 73% | 83% |
| VOC Emissions Decrease | | 39 |

### 3.2.2 PAA Oven Replacement

The replacement of Zone 1 Oven will not increase the process capacity of the PAA line. The solvent used for the PAA primer is acetone, a non-precursor for VOCs, so the only regulated emissions from this piece of equipment will be from combustion of natural gas and the acetone. In the same manner as the oven it's replacing, this new oven's exhaust will be ducted to a thermal oxidizer. Permittee has calculated the potential emissions from the new oven:

| Pollutant | Potential Emissions (TPY) |
|---|---|
| NOx | 1.3 |
| CO | 11.5 |
| SOx | 0.1 |
| PM10 | 0.75 |
| VOC | 1.2 |

3.2.3 Fan Exhaust Capacity Increase - Cure Ovens #17-21

In revision R04, it was demonstrated that adding a single oven represents an increase of 8.72 tpy in VOC emissions. Since the increase in fan exhaust capacity of the ovens is equivalent to adding ½ oven, VOC emissions will increase by 4.36 tons per year (approximately 0.87 tpy per oven).

Modification of these fans does not affect in any way how the oven emissions are directed to the RTO.

3.2.4 Purge/Cure Oven #24

Emissions from this new oven occur due to the combustion of natural gas as well as from the process. The oven will have four burners, each rated at 1.2 MMBtu/hr. In order to avoid PSD applicability, exhaust from this oven will be vented to the RTO in the same fashion as other purge/cure ovens. Potential emissions from this unit have been calculated as:

| Pollutant | Potential Emissions (TPY) |
|---|---|
| NOx | 2.06 |
| CO | 1.73 |
| SOx | 0.01 |
| $VOC_{(combustion)}$ | 0.23 |
| $VOC_{(process)}$(includes HAPs) | 17.0 |
| formaldehyde | 0.30 |
| phenol | 1.7 |
| xylene | 0.1 |

## 4. REGULATORY REQUIREMENTS AND MONITORING

### 4.1 PSD Applicability

The application for the original Title V permit filed on September 5, 1997, and issued on January 18, 2005 established a benchmark for future major modifications as defined by Code §1-3-140-.78. In the aggregate, none of the modifications authorized under either the original Title V permit or any of the subsequent revisions triggered the major modification threshold. Even looking back at those same modifications on an after-the-fact basis based on the revised dip-room capture efficiency analysis, those modifications still did not constitute a major modification. Even with a 5-year "lookback" at aggregate changes, by applying netting the changes in emissions authorized under this revision similarly avoid amounting to a major modification that would trigger PSD.

### 4.1.1 VOC Emissions

Not considering "lookback", the physical changes authorized by this permit revision are not a major modification as defined in §1-3-140.78. Due to the dip room improvements, the net VOC increase does not exceed the significance level of 40 tons per year.

*Net Emissions Increase = Actual (Future Allowable) Increases - Actual Decreases* (defined in §1-3-140.85)

The table below summarizes the actual increases and decreases which have occurred in the contemporaneous period, as well as the net emissions increase. There have been no other modifications to the permit from 2001 until 2005.

| Application Date | Issued Date | Mod # | Description | In Diproom ? | Capture | Actual VOC Emission Increase TPY | Net VOC Emission Increase TPY |
|---|---|---|---|---|---|---|---|
| 2/8/05 | 6/2/05 | R01 | Add new applicable requirement | N/A | N/A | 0 | **0** |
| 9/13/05 | 2/13/06 | R02 | Compliance with JJJJ[5] | NO | N/A | 0 | **0** |
| 7/26/06 | 12/14/06 | R03 | Septum Core[6] | NO | 95% | 7.59 | |
| | | | Purge/Cure Ovens #22 & 23 | YES | 75% | 18.78 | |
| | | | | | *Subtotal* | *26.37* | **26.37** |
| 2/9/07 | 5/24/07 | R04 | Purge/Cure Oven #23 (2nd half) | YES | 75% | 8.72 | **35.09** |
| 4/12/07 | 12/27/07 | R05[7] | RTO Replacement | YES | 75% | 2.26 | |
| | | | Dip Room Capture Improvements[8] | YES | 83% | (-39) | |
| | | | Fan Upgrade Ovens #17-21 | YES | 75% | 4.36 | |
| | | | PAA Oven Replacement | NO | 95% | 0.18 | |
| | | | Purge/Cure Oven #24 | YES | 75% | 17 | |
| | | | | | *Subtotal* | *(-15.20)* | **19.89** |

### 4.1.2 NOx Emissions

[5] The application for revision R02 shows a potential increase, but due to the enclosures installed as required by 40 CFR Part 63 Subpart JJJJ, actual emissions have slightly decreased.

[6] Includes emissions from the Septum Core Machine and Septum Adhesive Cure Machine .

[7] In actual order of installation.

[8] See §3.2.1 for a breakdown of the 39 ton decrease.

Hexcel is not a major source of NOx as defined in §1-3-140.78. NOx increases due to the changes on this revision, as summarized below, do not exceed the significance threshold of 40 tons per year and therefore this is not a major modification.

| Description | Potential Emissions Increase (TPY) |
|---|---|
| RTO Replacement | 21.50 |
| PAA Oven Replacement | 2.06 |
| Purge/Cure Oven #24 | 2.06 |
| **TOTAL** | **25.62** |

4.2 Monitoring/Compliance Verification

4.2.1 New RTO System

4.2.1.1 Destruction Efficiency

The new RTO system units #3 and #4 will have to provide at least a destruction efficiency of 95%, as required by the permit's BACT requirements. The revision requires annual testing of the RTO units, beginning with testing unit #3 after its startup, and then #4 after its startup. Recurring annual testing shall be conducted no later than 12 months from the startup of #4, to allow the Permittee to test both units at the same time in future years.

4.2.1.2 NOx and SOx Emissions

The current requirements of the permit regarding fuel burning emissions will apply to the new RTO system. This system will only burn natural gas as makeup, and Permittee is required to keep records of the natural gas use.

4.2.1.3 Parameter Monitoring

The permit's current requirements regarding residence time apply to the new RTO system. Such residence time will be established during the first emission test. Additional information on monitoring of flow rate or temperature is explained in the CAM section below.

**4.2.2 Dip Room Capture Demonstration**

It is necessary to determine the dip room capture efficiency in order to establish the net control efficiency of emissions. Past testing conducted by the Permittee showed that the average capture was approximately 75%. It is anticipated that with all the improvements in the dip room, the capture efficiency will increase to 83% (see table in Section 3.2.1).

While the permittee has been working on a different approach to demonstrate that the capture is higher than the test results have shown, the 75% figure has been used for purposes of emissions calculations regarding this revision.

This permit revision requires another demonstration of the capture efficiency, since the revision requires the capture of several emission points which were previously vented to the atmosphere. Permittee will submit a test protocol for PCAQCD's approval at least 60 days before the test is conducted.

**4.2.3 Purge/Cure Oven #24 and PAA Oven**

Same as other natural gas burning equipment at the facility, Permittee will keep records of the amount of natural gas burned, as a surrogate of NOx and CO emissions.

Emissions from Purge/Cure Oven #24 will be captured and controlled in the same fashion as the other ovens in the dip room (Group 2 ovens), and except for during the cool down, emissions will be vented to the new RTO system.

### 4.2.4 HAPs Major Source Status/Compliance Plan

The Permittee is still working towards demonstrating that this facility is not a major source of HAPs. When MEK was delisted from EPA's list in 2005[9], approximately 50 tons of emissions from this facility became "non-HAPs". At the time, calculations submitted by the permittee, assuming a 90% dip room capture efficiency showed that the facility was no longer a major source of HAPs.

Further capture efficiency testing, conducted as required by V20602.000, resulted in a lower 75% efficiency. Re-calculated emissions, using this capture, indicate the facility is a major source of HAPs due to the emissions of phenols and formaldehyde from the dip room.

In August, 2007, Hexcel submitted a plan to PCAQCD to demonstrate that some of the phenol from the resin is retained in the honeycomb. Results from this testing are still pending, and therefore the status of this source with respect to HAPs major source status has not changed from the original assumption that it is a major source.

Pending the outcome of that effort, either this permit will need to be revised to clarify that certain standards (*e.g.* MACT Subpart JJJJ) were inapplicable *ab initio*, or Hexcel and PCAQCD will need to address the issue through either an amended compliance plan or some other means.

### 4.2.5 Compliance Assurance Monitoring (CAM) - 40 CFR Part 64

Permittee submitted a CAM plan for the new RTO (#3 and #4) on August 21, 2001. EPA's Technical Guidance Document: Compliance Assurance Monitoring (Aug. 1998) was used as a reference tool in developing the CAM plan.

#### 4.2.5.1 Background

| | |
|---|---|
| Pollutant: | Volatile Organic Compounds and Hazardous Air Pollutants |
| Emission Unit: | Dip Room Ovens and process emissions. Also, the new RTOs will serve as backup to RTO #2 to processes such as adhesive printlines, corrugated product ovens, UD Tapeline, PAA line.... |
| Control Technology: | RTOs #3 and #4 |
| Applicable Regulation: | Permit Requirement |
| Emission Limit: | 95% destruction efficiency |

#### 4.2.5.2 Rationale for Selection of Performance Indicators

The operating conditions for this type of source (dip room and purge/cure ovens) can have a significant impact on the amount of volatile organics and hazardous air pollutants created. An estimated 83% captured emissions from the dip room as well as from the ovens will be ducted to the new RTOs #3 and #4, with an estimated destruction efficiency of 95%. Therefore, indicators of performance for the capture and control system, including the RTOs were selected for this source.

Combustion zone temperature and exhaust gas flow rate will be indicators of the RTOs' performance. A proper combustion zone temperature range is an indicator of the RTOs good performance, and a significant decrease in the temperature may indicate that complete combustion is not being achieved.

[9] Local deregulation pending.

As indicated in Appendix A of the CAM Technical Guidance, an example of a thermal oxidizer CAM plan, maintaining proper flow through the entire system is important for maintaining capture efficiency. Consistent with EPA's CAM guidance, Hexcel is proposing to use the RTO exhaust gas flow rate as the parameter to be monitored because a certain minimum amount of air flow through the system is important for maintaining capture efficiency. An initial minimum of 5,000 cfm through each RTO is proposed as a "floor" value to ensure draw through the system until testing of each unit can provide a more specific minimum flowrate based upon actual operating data. Flowrate shall be monitored with a differential pressure flow device, fan motor anemometer or other approved device to measure gas velocity or flow rate at the RTOs outlets.

4.2.5.3 Rationale for Selection of Indicator Ranges

The ranges for the temperature and flow rate will be identified 60 days before testing each RTO unit, and demonstrated with each test.

Initially, the selected indicator range for the combustion zone temperature is "no less than 1500°F". During the shakedown period, lower temperatures during a period of "planned shutdown" (as defined in the permit) or engineering evaluations[10] conducted during the shakedown period, shall not be considered excursions. When an excursion occurs, corrective action will be initiated. All excursions will be documented and reported.

Initially, the selected indicator range for the gas flow rate is "no less than 5,000 cfm"measured at the outlet of the RTO, which represents 10% of the maximum design flow rate. An initial minimum of 5,000 cfm through each RTO is proposed as a "floor" value to ensure draw through the system until testing of each unit can provide a more specific minimum flowrate based upon actual operating data. During the shakedown period, lower flowrates during a period of "planned shutdown" (as defined in the permit) or engineering evaluations conducted during the shakedown period, shall not be considered excursions. When an excursion occurs, corrective action will be initiated. All excursions will be documented and reported. Corrective actions will be taken to return all indicators to within their respective ranges.

Both the temperature and flow rate will be monitored with a digital data acquisition system, which will record the data every 15 minutes.

**CAM Plan for Regenerative Thermal Oxidizers**

| | **RTOs #3 and #4** | |
|---|---|---|
| **Indicator** | Combustion Zone Temperature | Exhaust Gas Flow Rate |
| **Measurement Approach** | Thermocouple or RTD | Differential pressure flow device, fan motor anemometer or other approved device to measure gas velocity or flow rate at the RTOs outlets. |
| **Indicator Range** | Range to be established after test of RTO system.<br>Until then, minimum combustion temperature shall be no less than 1500°F, based on a 1-hr rolling average, except during planned shutdown periods, and controlled engineering evaluations. | Range to be established after test of RTO system.<br>Until then, minimum flow rate shall be no less than 5,000 cfm measured at the outlet of the RTO(10% of max. rating), based on a 1-hr rolling average, except during planned shutdown periods, and controlled engineering evaluations. |

[10] Engineering evaluations are small scale tests conducted by the permittee on the RTO unit before startup and testing, during a 6 month shakedown period, to determine the temperature and flow rate necessary to achieve the required efficiency.

| | | |
|---|---|---|
| **Data Representativeness** | Data will represent normal working conditions | Data will represent normal working conditions |
| **QA/QC** | Calibration, maintenance and operations in accordance with manufacturer's specification. Calibration of DAS annually. | Calibration, maintenance and operations in accordance with manufacturer's specification. Calibration of DAS annually. |
| **Monitoring Frequency** | Every 15 minutes | Every 15 minutes |
| **Reporting Units** | °F or °C | cubic feet per minute |
| **Data Collection Procedure** | Digital data acquisition system (DAS) | Digital data acquisition system (DAS) |
| **Averaging Period** | 1-hour rolling average | 1-hour rolling average |

### 4.3 Pinal County HAP Rule

The Pinal County Hazardous Air Pollutant (HAPs) Program[11] was adopted in June, 2007. Due to its SIC Code, Hexcel is an "affected source category". Due to the changes authorized by this revision, there is an increase in the emissions of phenol and formaldehyde from the facility. Nonetheless, the effective date of the HAPs program is July 7, 2007, and the program therefore does not apply to any new source or modification for which applications have been received before that effective date.

Future applications for changes made to this facility will have to include a HAP Rule applicability analysis. The "de minimis" thresholds for formaldehyde in the HAPs rule are so low, that practically any change within the dip room could trigger the rule requirements.

## 5. AMBIENT IMPACT ASSESSMENT

The changes to the permit do not include significant increases in emissions of VOCs or NOx, therefore, no additional impact assessments have been conducted for this revision.

## 6. LIST OF ABBREVIATIONS

atm. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . atmosphere
AP-42 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
"Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources", 5th Ed.
BACT . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Best Available Control Technology
CAA . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Clean Air Act
CAM . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Compliance Assurance Monitoring
cfm . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . cubic feet per minute
CFR . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Code of Federal Regulations
CO . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Carbon Monoxide
DAS . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Digital Data Acquisition System
HAPs . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Hazardous Air Pollutants
IPA . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Isopropyl alcohol
hr . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Hour
lb . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Pound
MACT . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Maximum Achievable Control Technology
MEK . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Methyl ethyl ketone
MIBK . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Methyl isobutyl ketone
MMBTU . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Million British Thermal Units
Mod. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Modification
MSDS . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Material Safety Data Sheet
NMP . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . N-methylpyrrolidone
NOX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Nitrogen Oxides

[11] Chapter 7, Article 2

NSPS . . . . New Source Performance Standard
NSR . . . . New Source Review
PCAQCD . . . . Pinal County Air Quality Control District
PGCAQCD . . . . Pinal-Gila Counties Air Quality Control District
PM10 . . . . Particulate Matter nominally less than 10 Micrometers
PSD . . . . Prevention of Significant Deterioration
RTO . . . . Regenerative Thermal Oxidizer
SIC . . . . Standard Industrial Code
SOX . . . . Sulfur Dioxide
tpy . . . . tons per year
TSD . . . . Technical Support Document
VOC . . . . Volatile Organic Compound
yr . . . . year