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Technical Support Document
PSD/Title V Permit - Renewal
Hexcel Corporation
Permit #V20639.000

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1. BACKGROUND

1.1 Applicant/Application History

This permit renewal 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.

The proposed facility location lies in the central desert basin of Arizona, about 39 miles from Superstition Wilderness, and 61 miles from Saguaro National Monument. These areas are designated as Federal PSD Class I areas which are afforded special protection from environmental impacts under the CAA. Although it does not qualify for the Class I area protections under the CAA, the BLM's Table Top Wilderness lies about 17 miles from the facility.

The Gila Indian Reservation lies about 7 miles north of the facility, and the Ak Chin Indian Reservation lies about 10 miles to the northwest.

This technical support document mostly discusses 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 application, signed by Russ Thurman, Plant Manager, dated 9/10/09.
- “Facility Change without a Permit Revision” letter from David Lima, dated 9/29/09 to notify PCAQCD of the Cure Oven #460C’s replacement.
- E-mail from David Lima dated 12/10/09 with the following administrative changes to the permit:
  i. Updated the capture efficiency of Group 3 emissions to 83% as demonstrated through testing.
  ii. Update minimum residence times for the RTOs to 1 second each as designed by manufacturer.
  iii. Remove “Dip Room Capture Demonstration” since it has been completed.
  iv. Equipment List updates: remove 140A and 140B graphite/HRP corrugators, graphite oven #2, 162 saw, Chiller Engine C and hot water boiler #2; rename the Septum Core Machine to Acousti-Cap/Blot Machine #1; and add a Direct Contact Water Heter.

1.2 Attainment Classification

This facility is located in an area designated as "attainment" for all pollutants.

However, ozone and particulate nonattainment areas all commence at the Pinal County/Maricopa County line, lying about 30 miles due north of the project.

1.3 Permitting History

The following is a list of permits applied for and/or issued since 1992:

Permit #	Permit Type	Issue Date	Equipment/Change
20008	Operating	8/14/92	
10043	Installation	9/27/93	CNF Machine
A20422	Operating	1/18/94	

Permit #	Permit Type	Issue Date	Equipment/Change
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.
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
V20602.R05	Significant Revision	12/27/07	Replacement of oxidizer #1, dip room capture enhancements, PAA oven replacement, oven fan size increase, addition of oven #24.
V20602.R06	Significant Revision	7/21/08	Addition of Purge/Cure double oven #25
V20602.R07	Major Modification	11/23/09	Addition of purge/cure ovens and other VOC-emitting activities, enough to trigger PSD/BACT. Removal of MACT JJJJ requirements.

1.4 Compliance/Enforcement History

Inspections are regularly conducted at this facility to ensure compliance with its applicable permit conditions. Hexcel is currently in compliance with the permit conditions cited in permit V20602.R07. The facility is inspected every fiscal year and the following inspection will take place before July 2010. The following table summarizes the recent inspections that have 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
5/28/08	Annual compliance	See NOV below
6/17/09	Annual compliance	In compliance

A Notice of Violation (NOV) was issued on July 30, 2008 and Hexcel has achieved compliance with respect to all the items listed in the NOV. The NOV was settled on December 11, 2008.

The NOV was issued due to:

- Several deviations were reported by the source between 2006 and 2007, most regarding the pressure differentials at RTO #1. Since then, RTO#1 has been replaced.

- The NOV also includes alleged changes made to the operation of the dip room through-the-wall vents without proper permitting. These alleged changes occurred prior to the issuance of the original Title V permit. At the very least, as of 'R06, these vents/fans are properly permitted.
- The 2006 annual certification was not signed by a Responsible Official. This has been corrected.

2. PROCESS DESCRIPTION

2.1 General Process

This facility manufactures "honeycomb" and "structural cores" for aerospace and other industrial applications[1]. The honeycomb material si typically used as a structural web, bonded between sheets to form a stiff, strong and light-weight structural panel. Hexcel manufactures both metallic and nonmetallic cores. The process consists of five main steps:

Step 1. Pre-printing
Step 2. Printing and core preparation
Step 3. Core forming
Step 4. Cure Coating and Curing
Step 5. Core Shaping, bonding and finishing.

To increase the rigidity required for most structural applications, some of the cores are stiffened by impregnating or coating them with a resin. The resin coating is applied by first dipping the core into a solvent/resin mixture, evaporating (purging) the solvent and finally thermally curing the remaining resin. The dip/purge/cure cycle is repeated as many times as required to achieve the desired physical properties of the core.

The purging and curing is conducted at several Purge/Cure ovens. The honeycomb blocks are cured in three distinct phases:

Purge phase: the majority of the carrier solvent is driven off during this phase.

Cure phase: the temperature is increased so that the resin reacts to its polymeric form.

Cooldown phase: the honeycomb block is cooled down for removal from the oven.

A more detailed description of this and other processes at the Hexcel facility is included in the Title V permit application (1997) and previous TSDs.

2.2 Existing Capture and Control - RTO Controlled Processes

Three regenerative thermal oxidizer (RTOs) systems control VOC emissions from the facility.

RTO #2, installed in 1999 has been tested on an annual basis since the Title V permit has been issued, and results always show that at a minimum, a 95% destruction efficiency can be achieved.

RTO #3 and #4 are required to have at least a 95% destruction efficiency.

Most emission points rely on hoods and "sweeps" to capture emissions for conveyance to the oxidizer. Some of them are in Permanent Total Enclosures. The largest emission points, the purge/cure ovens, do provide total enclosures that capture essentially all emissions, but as

[1]Within this facility, there are at least 35 different primary production operations, but since the activity triggering this permit revision is related to the honeycomb block manufacturing, the general process description concentrates on that process.

explained in previous TSDs, an active control system only directs emissions to the RTO units during part of the curing cycle. Testing conducted in 2006 of the capture/atmospheric bypass control regimen indicated an overall capture efficiency of 95% on the emissions from the Purge/Cure ovens.

Emissions occur on a fugitive basis within the diproom, but exhaust as a point source. When adequate demand for process air for the oven exist, the dip room emissions can be ducted to the ovens from which they may be alternatively routed to either the atmosphere or an oxidizer.

3. VOC EMISSIONS

3.1 General Methodology

For purposes of discussion of capture and control efficiency within the dip room, this section summarizes the results from different tests conducted at Hexcel since the original Title V permit was issued, as well as an explanation of how all these tests come together. This information was obtained from Hexcel's letter to PCAQCD on April 25, 2008.

Dip room emissions were labeled in the original TV permit as Group 3 emissions. This group of emissions was made up of certain oven vents and all Purge/Cure Ovens (labeled as Group 2), and constituted the combination of fugitive emissions from the Dip Room and those ovens which are tributaries from the sweeps within the Dip Room.

The Group 2 Purge/Cure Ovens are equipped with control dampers on the exhaust side that are positioned to vent to the RTO during VOC-rich portions of the oven cycle, and directly to the atmosphere during low or non-VOC portions of the oven cycle. The original Title V permit included a testing regime for both capture and efficiency, to quantify the atmospheric bypass from the oven damper system. The tests were conducted in 2005, and the average capture efficiency measured during the tests was 95%.

Group 3 emissions include all honeycomb dip/cure process, including the room itself, dip tanks, and ovens (already included in Group 2), both controlled and uncontrolled emissions (at the time these were the natural draft openings, floor sweeps and vents, barometric dampers on floor sweep manifolds, purge/cure oven pass-through and VOC emissions from ovens in late stages of cure and/or cool down). For purposes of demonstrating that Hexcel was not a major source of HAPs, they went on to demonstrate that in the case of formaldehyde and phenol, the assumption that 100% of the VOCs are emitted during the process is inaccurate. Based on engineering experience, Hexcel staff knew that formaldehyde and phenol participate in the resin polymerization reaction, and that the amount available for emissions purposes is reduced to some degree from the amount originally present in the resin mixture. A laboratory-based study was conducted in mid-2007 which showed that 98.6% of the formaldehyde and 57% of the phenol was consumed during the reaction and was unavailable for emissions. This testing also demonstrated that the vast majority of the emissions of these 2 compounds took place under elevated temperatures, i.e., in the ovens, where the level of capture and control is the highest.

Using the results from tests on Group 2 and 3 emissions, Hexcel divided each individual VOC component into low-volatility and high-volatility groups. The high-volatility compounds are most accurately quantified by using the Group 3 capture efficiency test result of 75%, since they are more likely to be emitted within the Dip Room even before the increased temperature of the ovens. The low-volatility pollutants are most accurately quantified by using the Group 2 capture/atmospheric bypass test result of 95% since these emissions will be released during the high temperature cycles of the ovens.

3.2 Potential/Allowable Emissions

Facility-wide potential emissions of HAPs and VOCs, after the changes allowed by revision 'R07

have been estimated at 9.9 and 300 tons per year, respectively

4. REGULATORY REQUIREMENTS AND MONITORING

4.1 TITLE V/PSD Applicability

4.1.1 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS - VOCs

No BACT analysis has been conducted as part of this renewal since no changes are being proposed. The following is just a summary of the previous BACT determination.

As part of the last major modification to this permit, which triggered PSD, Hexcel proposed a well-designed ventilation system for VOC capture, and the use of an RTO with 95% destruction efficiency as BACT. PCAQCD concurred.

The EPA expressed concern over the lack of an annual TPY-cap in the current permit revision proposal.

In order to establish a ton-per-year VOC emission cap, Hexcel proposed to allow for an additional 10% or 27 TPY to accommodate possible changes in product mix. The resulting facility cap is 300 TPY for VOCs, and compliance is tracked through a refined accounting system.

Hexcel has to demonstrate on a monthly rolling basis that the emission cap is not being exceeded. In addition to demonstrating compliance with the annual VOC limitation, Hexcel has to implement a tracking system for VOC emission changes resulting from changes in or additions of process materials. This language was added as a result of discussions with EPA regarding formulation changes being considered “changes in the method of operation”.

4.1.2 AIR QUALITY IMPACT ANALYSIS

No impact analysis has been conducted as part of this renewal since no changes are being proposed.

4.2 Regulatory Emission Limitations and Compliance/Monitoring

N o permit or facility changes are proposed as part of this renewal so the following sections are just summaries of existing permit conditions.

4.2.1 HAPs Emissions Caps

During EPA’s review of revision V20602.R07, they raised the issue of enforceability regarding the minor source of HAPs status. In response to their comments, an emission caps was added to the permit of 10 tons for individual HAPs and 25 tons for a combination of HAPs.

Additionally, in order not to exceed these caps, the permit requires a “budget” limitation for HAPs. Basically, Hexcel is required to keep monthly and 12-month rolling records of HAPs, and every month, on the 15th day, set a HAPs emission limit for the next 2 months (based on emissions from the past 10 months). So each month their limit is re-set.

4.2.2 Compliance Assurance Monitoring (CAM)

A CAM plan was already submitted for the RTO units (#3 and #4) that will be used to control emissions from these new emissions sources. The CAM requirements are

included in section §7.D.4 of the permit.

4.3 NSPS/NESHAP Applicability

This facility is not a major source of HAPs. The facility is subject to 40 CFR Part 63 Subpart GG for Aerospace Manufacturing and Rework facilities since it was a major source of HAPs at the time this subpart was promulgated.. Currently there are no promulgated area source NESHAPs that regulate any of this facility's processes.

The facility is subject to 40 CFR Part 60 (NSPSs) Subparts Kb for Volatile Organic Storage Vessels and VVV for Polymeric Coatings.

5. LIST OF ABBREVIATIONS

ADEQ . . . . . Arizona Department of Environmental Quality
ADS . . . . . Agglomerative Dust Suppression
AP-42 . . . . . .
"Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources", 5th Edition
AQRV . . . . . Air Quality Related Values
BACT . . . . . Best Available Control Technology
BLM . . . . . Bureau of Land Management
CAA . . . . . Clean Air Act
CAM . . . . . Compliance Assurance Monitoring
CFR . . . . . Code of Federal Regulations
CO . . . . . Carbon Monoxide
EPA . . . . . Environmental Protection Agency
ESA . . . . . Endangered Species Act
FLAG . . . . . Federal Land Manager's Air Quality Related Value Guidance
FWS . . . . . Fish and Wildlife Services
HAPRACT . . . . . Hazardous Air Pollutant Reasonably Available Control Technology
hr . . . . . Hour
lb . . . . . Pound
MACT . . . . . Maximum Achievable Control Technology
MEK . . . . . Methyl Ethyl Ketone
MMBTU . . . . . Million British Thermal Units
Mod. . . . . Modification
MSDS . . . . . Material Safety Data Sheet
NOV . . . . . Notice of Violation
NOX . . . . . Nitrogen Oxides
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
RBLC . . . . . RACT/BACT/LAER Clearinghouse
RTO . . . . . Regenerative Thermal Oxidizer
SIC . . . . . Standard Industrial Code
SIP . . . . . State Implementation Plan
SOX . . . . . Sulfur Dioxide
tpy . . . . . tons per year
TSD . . . . . Technical Support Document
VOC . . . . . Volatile Organic Compound
yr . . . . . year