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From: Kale Walch
Date: July 15, 2015

Technical Support Document
PSD/Title V Permit
Hexcel Corporation
Permit #V20661.R01

Tables and Figures

1. BACKGROUND

1.1 Applicant/Application History

This permit revision pertains to an existing honeycomb manufacturing facility located at 1214 West Gila Bend Hwy, Casa Grande, Arizona, upon parcels also identified by Pinal County Assessor's Parcels # 503-46-020C, 503-46-020D, 503-46-021-D, and 503-46-047. The SIC Codes are 2679 and 3469.

The 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 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 received on 6/23/15, signed by Robert Moray, Hexcel Plant Manager
- Email from Steve Hartson, Hexcel EH&S Manager, on 6/26/15 providing an electronic copy of the application.
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1.2 Attainment Classification

This facility is located in an area designated as non-attainment for PM10 and attainment for all other pollutants. The West Central Pinal PM2.5 non-attainment area lies approximately 5 miles west of the facility. Additional ozone, CO and particulate nonattainment areas all commence at the Pinal County/Maricopa County line, lying about 30 miles due north of the facility.

1.3 Permitting History

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

TABLE 1: PERMITTING HISTORY

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A20422.R02	Significant Revision	Application withdrawn	4 ovens, RTO, oil heater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.
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.
V20639.000	Renewal	3/31/10	
V20639.R01	Minor Revision	11/14/11	SVE Unit for MEK Spill
V20639.A02	Administrative Amendment	2/21/12	Change Equipment ID 490 from Block Oven Carts (4) to Four-Block Oven Cart (1)
V20639.R03	Minor Revision	10/16/12	Replace Prime/Cure Oven #121 & #122, install Prime/Cure Ovens #123 & #124, install Vacuum Bond Oven #2, install Hot Oil Heaters #4 & #5, remove Dust Collector #5, install Dust Collectors #6 & #7, install a seond Acousti-Cap Dip/Blot Machine, vent the A-Cap Machine Dip Pans to an RTO, increase the speed and heater rating for 335 Printline #1, install 335 Printline #2, increasing Purge/Cure uptime via renovation/relocation, removal of the SVE unit since the MEK cleanup is complete, changes with minimal or no emissions include a 3000 gallon temporary resin storage tank for the 335 printline, adding 10 existing septum insertion machines to the equipment list, changing to a wider Nomex fabric

V20639.R04	Minor Revision	12/10/13	Replace Prime/Cure Ovens #121 & #122, update firing rate of Prime/Cure Ovens #123 and #124, remove Purge/Cure Ovens #8, #9, #10, #11 and #13, install Purge/Cure Ovens #29, #30 and #31, remove Corrugated Oven #4, install Corrugated Oven #2, remove Product Forming Oven, install RTO #5, install Al Flexcore Machine #2, install Heat Form Oven #2, install Skin Stick Machine #2, install Dust Blow Out Booth, remove USTs #16 thru #26, install ASTs #1 thru #6, install Steam Boiler #6, authorize 2.0 MMBtu/hr for comfort heating and cooling units, relocate Dust Collector #1, remove Dust Collectors #2, #3 & #7, install Dust Collectors #8, #9 and #10, install FEMCO Saws #9, #10 & #11, remove 197 Saw and 720 Graphite Saw, relocate FEMCO Saw #1, #2, #4, #5, #6, and #8, relocate 162 Saw, relocate Post Cure Oven #4, remove Vacuum Bond Oven #2, remove Nomex Change option, remove the Cooling Lane potion of Project Jalapeno.
V20639.R05	Significant Revision	9/15/14	Authorized several changes related to expanded operations the facility, including the construction of new buildings, construction of a new dip area, separation of the dip, purge, and cure operations into three distinct process steps relative to the historic combined setup, elimination of VOC laden air as a source of makeup air to the ovens, adding support equipment for the new and/or modified ovens, removed a diesel-fired emergency generator and a diesel-fired emergency air compressor. This revision also lowered the calculated potential emissions from RTO #2, #3 and #4 by changing the reported design heat input. A facility wide NOx cap and associated recordkeeping were added to the permit. Additional recordkeeping, monitoring and testing were included in association with the redesigned process.
V20661.000	Renewal	5/26/15	Incorporated the provisions of NESHAP WWWWWW in relation to two processes involving chromium solutions.

1.4 Compliance/Enforcement History

Inspections are regularly conducted at this facility to ensure compliance with its applicable permit conditions. As indicated in §3 of the permit, Hexcel is currently in compliance with the permit conditions cited in permit V20661.000. The facility is inspected at least bi-annually. The following table summarizes the recent inspections and compliance reviews that have been conducted on the source:

TABLE 2: INSPECTION HISTORY

Inspection / Review Date	Type of Inspection / Review	Results
5/17/06	Compliance Inspection	In compliance
10/4/06	Compliance Inspection	In compliance
5/28/08	Compliance Inspection	NOV; Settled 12/11/08
6/17/09	Compliance Inspection	In compliance
6/4/10	Compliance Inspection	In compliance

3/21/12	Compliance Inspection	In compliance
5/31/13	Compliance Inspection	In compliance
1/29/14	Failed stack test	NOV; Settled 6/6/14
6/30/15	Compliance Inspection	In compliaince

In January of 2014 Hexcel disclosed a failed stack test on RTO #4. Subsequent repairs enabled Hexcel to demonstrate compliance via a passing stack test on this unit in March of 2014. These repairs also enabled Hexcel to demonstrate that the part failures were a result of conditions created during the first test. Since compliance has been demonstrated this TSD and the associated permit do not contain a compliance plan.

2. PROCESS DESCRIPTION

2.1 General Process

With the issuance of permit V20639.R05 Hexcel is planning to expand the operation at the Casa Grande Facility. The previously approved project includes the construction of new buildings, construction of a new dip room, separation of the dip, purge, and cure operations into three distinct process steps relative to the current combined setup, elimination of VOC laden air as a source of makeup air to the ovens, and adding support equipment for the new ovens. In an effort to improve employee safety as well as reduce emissions from the Casa Grande Facility, the proposed project includes a new process design to minimize emissions by upgrading the VOC emission control measures on new, modified, and existing equipment, which will ultimately result in a net decrease of site-wide VOC emissions.

The Casa Grande Facility manufactures "honeycomb" and "structural cores" for aerospace and other industrial applications. The honeycomb material is 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. Core Coating and Curing
Step 5. Core Shaping, bonding and finishing.

Hexcel utilizes various printing units to apply lines of adhesives to metallic and nonmetallic substrate sheets. The printed sheets are then cut to length, stacked and pressed for curing of the adhesive on the substrate. The cured sheets are then expanded to form the core with honeycomb shaped cells. The expanded core then goes into a Prime Cure Oven to set the substrate to the honeycomb shape.

Hexcel increases the stiffness of the nonmetallic honeycomb cores by impregnating or coating them with a phenolic resin. The first step of this process is to dip the cores in the phenolic resin/solvent mixture tanks. Following the dip process, the cores are subjected to a stream of compressed air which is blown across the cores, while in the dip tanks, to prevent the phenolic resin from drying (or "bridging") between the core cells. Emissions of VOC from the dip and blowout process will be captured in a locally enclosed tank system and then sent to the RTO units for treatment. For employee health and safety reasons, the new proposed dip area will be isolated from the cure ovens to better control the atmosphere inside the employee work areas. In addition, a secondary capture system will be utilized to maintain ambient concentrations of VOC materials outside the dip tanks below OSHA Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs). Any VOC emissions that may escape from primary capture at the dip tanks will

be subject to additional secondary capture. Emissions of VOC captured by the secondary system will also be routed to the new and/or existing RTO units for treatment.

Cores are transferred from the dip tanks to the purge ovens for the purge cycle of the process. “Purge” ovens will be installed on the building walls separating the new dip area and the cure ovens. Each "purge" oven will have one door open toward the dip area side and another door open toward the cure ovens side. A honeycomb core is transitioned into the "purge" oven by closing the door on the cure ovens side, opening the dip area door, moving the core inside the "purge" oven, and then closing the dip area door to start the purge cycle. Once the purge cycle is completed, the door on the cure ovens side is opened to move the purged core into the cure ovens to complete the “cure” cycle of the process by using the "cure" ovens.

2.2 Capture and Control - RTO Controlled Processes

The VOC emissions from the dip and blowout process are expected to be released at a low temperature (i.e., the temperatures inside the dip tanks) and are contained through the proposed local enclosures. Emissions of VOC captured by the local enclosures at the dip tanks, along with VOC emissions from the “purge” ovens, will be collected and routed to a common header to the RTO units for treatment. In an effort to further improve employee safety and comfort, forced air exchanges at the dip area will be routed to the RTO units for treatment.

Emissions of VOC released while the cores are in transition from the purge ovens to the cure ovens are expected to be insignificant, and will not be captured or treated. These transit emissions to be quantified through initial testing. Residual VOC emissions that are released inside the “cure” ovens (at high temperatures) will be captured and treated in the RTO units. The temperature profiles in the purge and cure ovens are provided below:

Purge Ovens – Hold at the desired purge temperature profiles

Cure Ovens

- Phase 1 – “Warm Up” (to desired cure temperature);
- Phase 2 – Hold at the desired cure temperature; and
- Phase 3 – “Cool Down” (to reduce the temperature in the ovens to allow operators to remove the cores).

Emissions generated during the cure cycles are released during the Phase 1 and 2 process steps, whereas, insignificant VOC emissions are expected to be generated during the “Cool Down” phase of the cure cycles. Currently, the Purge/Cure ovens reside inside the dip room and receive makeup-air from inside the dip room. As a result, during the “Cool Down” phase of the Purge/Cure cycle (i.e., when VOC emissions are not routed to the RTO units) some of the dip area air containing VOCs, which is used as make-up air, is released to the environment through the oven stacks. Current permit Condition, V20661.000 5.C.2 accounts for these emissions by providing a 90% capture efficiency for the Purge/Cure ovens (i.e., 10% is used to account for the VOC in dip area air released to the environment). With the new configuration of the process, the cure ovens will receive non-VOC laden make-up air. This will allow the cure oven exhaust to be directly discharged to the atmosphere during the “Cool Down” phase without the need for treatment. The permit requires initial quantification of the VOC emissions from the “Cool Down” phase in order to confirm this.

The facility’s VOC emissions are capped at 300 tons per year, based on an annual total rolled on a monthly basis. Three existing regenerative thermal oxidizer (RTOs) systems control VOC emissions from the facility.

RTO #2, installed in 1999, is required to be tested annually to verify the destruction efficiency.

RTO #3 and #4, installed in 2007, are required to be tested annually to verify the destruction efficiency.

RTO #5 was authorized as part of the V20639.R04 revision and has yet to be installed. RTO#5 will also follow the same annual testing schedule upon commissioning of new/relocated emissions sources.

As part of revision V20639.R05 the installation of two additional RTOs was authorized. RTO #6 and #7 will generally serve as emission control devices for the various oven types and the dip process equipment along with existing RTOs #3 and #4. The revision requires annual testing upon commissioning of new/relocated emission sources to verify the destruction efficiency.

As detailed in Section 4.2 of the V20639.R05 TSD Hexcel provided a BACT analysis as part of the V20639.R05 revision that updated the required destruction efficiency for RTO #2, #3, #4, #5, #6 and #7 to 98%.

Detailed descriptions of the processes and emissions calculation methodologies applicable to the rest of the Hexcel Casa Grande Facility are included in the Title V permit application submitted to PCAQCD in September 1997 and several subsequent related submittals.

2.3 Permit Revision Changes

Hexcel submitted a Significant Permit Revision Application in December 2013 and revised Permit number V20639.R05 was issued in July 2014. A subsequent permit renewal application was submitted in September 2014 and the renewed Permit number V20661.000 was issued in January 2015. As part of the December 2013 significant permit revision application, Hexcel proposed two separate projects that affected the VOC emissions from the existing units listed below:

Acoustic-Cap Dip/Blot Machines (Equipment No. 530A and 530C)

- Route the vent pipe from the existing enclosure to a Regenerative Thermal Oxidizer (RTO) unit.

Mix Rooms (Equipment No. 200A, 200B, and 200C)

- Re-design mix tanks equipped with sealed lids and routed to an RTO during mixing operations; and
- Construct secondary enclosures inside the Mix Rooms, which will also be routed to an RTO when housing mix tanks with open lids.

Condition 7.B.4.f and 7.B.5.f of Permit Number V20661.000 requires testing to be conduct no later than 180 days after commissioning of the redesigned unit enclosures for verification of emissions/capture efficiency. However, the permit did not specify a construction timeline for those proposed changes. This minor permit revision will clarify the timeline for executing the two projects listed above as well as any testing requirements as follows:

- Hexcel shall start construction of the two projects listed above within 18 months of the issuance of revised Permit number V20639.R05, which is no later than January 8, 2016.
- The required testing will be conducted no later than 180 days after commissioning of the redesigned unit enclosures.

There are no physical changes or changes in the method of operation to the emission sources at the Casa Grande Facility being proposed in this minor permit revision application.

2.3.1 Acousti-Cap Dip/Blot Machines

The Acoustic-Cap process line can be divided into three sections, step one involves the insertion of the diaphragms, step two involves the dipping of the cores into a pan to apply adhesive to the tips of the diaphragm, and step three involves the curing of the dipped cores in an oven. Each of these three processes occur at different machines. Step one utilizes the Septum Insertion Machines and does not generate any emissions. Step three utilizes ovens that have been routed to an RTO. Step two involves the Acoustic-Cap Dip/Blot Machines, which reside inside a partially enclosed space and are expected to generate insignificant amounts of fugitive N-Methylpyrrolidone (NMP) emissions.

The enclosure surrounding the Acoustic-Cap Dip/Blot Machines is designed to maintain a certain temperature/humidity combination for process quality control purposes. Conditioned air is continuously circulated within the enclosure to achieve uniform conditions around the Acoustic-Cap Dip/Blot Machines. Slight positive pressure is maintained to prevent unconditioned air from entering the enclosure. There is an opening at the top of the enclosure to allow transferring of dipped cores into the drying oven. There is also an exhaust fan that vents a small amount of excess air through an outlet pipe to the inside of Building 73.

During the issuance of Permit Number V20639.R05, PCAQCD requested that the emissions from the exhaust fan outlet be routed to a control device for destruction of VOC (NMP) emissions. Hexcel agreed to connect the exhaust fan outlet to the air intake of the nearby drying oven, which is already routed to the RTO unit. This change shall be completed no later than January 8, 2016. In addition, PCAQCD requested a "bucket test" to be conducted inside the enclosure surrounding the Acoustic-Cap Dip/Blot Machines to verify that the fugitive emissions generated from NMP evaporation from the dip pan is indeed insignificant. This testing will be conducted no later than 180 days after commissioning of the redesigned duct work.

2.3.2 Mix Rooms

Mix Rooms are utilized to blend resins with solvents for utilization throughout the facility. Fugitive emissions are generated during the mixing process as well as when the mix tanks are loaded/unloaded. Currently the Mix Rooms are uncontrolled and fugitive VOC emissions are directly vented to ambient air for operator safety reasons.

As part of the significant permit revision application submitted in 2013. Hexcel proposed to redesign the existing Mix Rooms to include mix tanks that will be equipped with sealed lids and routed to an RTO during mixing operations. Secondary enclosures inside the Mix Rooms would also be constructed and be routed to an RTO when housing mix tanks with open lids. This change shall be completed no later than January 8, 2016.

For purposes of compliance demonstration, Hexcel proposed to conduct a one-time evaluation of the mix tanks and secondary enclosures inside the mix rooms. EPA Method 21 would be utilized to check for leaks at the mix tanks during the mixing operation. A negative pressure demonstration will verify that the direction of air flow through all natural draft openings is inward for the secondary enclosures. This testing will be conducted no later than 180 days after commissioning of the redesigned unit enclosures.

3. EMISSIONS

3.1 Equipment changes involving emissions

The proposed changes will not involve any changes in potential or actual emissions.

4. REGULATORY REQUIREMENTS AND MONITORING

4.1 TITLE V/PSD Applicability

This facility is an existing major source for Title V and PSD and an existing minor source under NSR for PM10. Since there are no additional emissions involved in this revision the proposed changes do not trigger any PSD or NNSR permitting requirements. Hexcel is not requesting an increase to the current 300 tpy VOC emission cap.

4.1.1 Air Quality Impact Analysis

No impact analysis has been conducted as part of this renewal since no changes are being proposed to the 300 tpy VOC cap.

4.2 Compliance Assurance Monitoring (CAM)

See previous TSDs for CAM applicability discussions

4.3 Performance Testing Requirements

See previous TSDs for testing requirement discussions

4.4 Additional Compliance Requirements and Recordkeeping

See previous TSDs for compliance and recordkeeping requirement discussions

4.7 Title V Operating Permit Equipment List

No changes are proposed for the equipment list.

4.8 Minor Permit Revision

The changes proposed in this revision meet the criteria set forth in PCAQCD Code §3-2-190 for processing as a minor permit revision.

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
ATM.....Atmospheres
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
CO2e ..... Carbon Dioxide Equivalent
DAHS ..... Data Acquisition Handling System
EPA .....Environmental Protection Agency
ESA .....Endangered Species Act
FLAG .....Federal Land Manager's Air Quality Related Value Guidance
FWS.....Fish and Wildlife Services
HAP..... Hazardous Air Pollutant

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
NMP N-Methyl-2-pirrolidone
NOV ..... Notice of Violation
NOX ..... Nitrogen Oxides
NSPS ..... New Source Performance Standard
NSR ..... New Source Review
NNSR ..... Nonattainment New Source Review
PCAQCD ..... Pinal County Air Quality Control District
PGCAQCD ..... Pinal-Gila Counties Air Quality Control District
PM2.5 ..... Particulate Matter nominally less than 2.5 Micrometers
PM10 ..... Particulate Matter nominally less than 10 Micrometers
PPMV ..... Parts per million by volume
PSD ..... Prevention of Significant Deterioration
PTE ..... Potential to Emit
RBLC ..... RACT/BACT/LAER Clearinghouse
RTO ..... Regenerative Thermal Oxidizer
SCFM ..... Standard Cubic Feet per Minute
SER ..... Significant Emission Rate
SIC ..... Standard Industrial Code
SIP ..... State Implementation Plan
SOX ..... Sulfur Dioxide
SVEU ..... Soil Vapor Extraction Unit
tpy ..... tons per year
TSD ..... Technical Support Document
VOC ..... Volatile Organic Compound
yr ..... year