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From: Anu Jain
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**Technical Support Document
PSD/Title V Permit
Hexcel Corporation
Permit #V20681.R02**

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1. BACKGROUND

1.1 Applicant/Application History

This permit pertains to a honeycomb manufacturing facility located at 1214 West Gila Bend Hwy, Casa Grande, Arizona, upon parcels also identified by Pinal County Assessor's Parcels #503-46-020D, and 503-46-047 F&D. 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.

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 SUMMARY

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A20422.R02	Significant Revision	Application withdrawn	4 ovens, RTO, oil heater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 JJJ requirements.
V20639.000	Renewal	3/31/10	Replacement of oven #460C
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 second 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
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 portion 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 WWWW in relation to two processes involving chromium solutions.

V20661.R01	Minor Revision	9/1/15	Clarified the timeline for routing the existing Acousti-Cap Dip/Blot machine enclosure vent pipe to a RTO and for routing the secondary enclosures in the existing mix rooms along with redesigned mix tanks to a RTO.
V20661.R02	Minor Revision	2/15/17	Clarified the terms combustion zone and residence time, changed reporting timelines from mid-month to month's end, renamed the Partswasher-Remote Reservoir to the Corrugated Pin Cleaning Hood and reduced the capacity, updated the list of parts washers and reduced the overall capacity, reauthorized Dust Collector #5 and removed Dust Collector #6, and removed the UD Tapeline, Ceramic Prepeg Line and Flow Coat Booth. Removed the requirements of NSPS VVV since these provisions only applied to the UD Tapeline and Ceramic Prepeg Line.
V20661.R03	Minor Revision	9/13/17	Reinserted six underground storage tanks (USTs) into the equipment list.
V20661.R04	Significant Revision	1/30/18	Relabeled the heat input of the RTOs in the equipment list. Changed the reoccurring test cycle to determine formaldehyde and phenol destruction efficiency to once every five years. Addition of ozone emitting material roborant.
V20661.R05	Significant Revision	5/30/18	Revision V20661.R05 updates the Compliance Assurance Monitoring provisions in Section §7.D.3 of the permit to address the short distance of positive static pressure with respect to the design of the new RTO #5 and RTO #6.
V20681.000	Renewal	1/7/20	Utilize ambient air instead of dip room air to cool off the cured blocks.
V20681.R01	Minor Revision	3/9/21	<ol style="list-style-type: none"> 1. Mix Room 66 and Mix Room 73 can be controlled for VOCs either at the room level or at the mixing vats, or at the tank level. 2. Acousti-cap enclosures can either conduct testing after commissioning or remain connected to the RTO and meet the capture and destruction efficiency required by the permit. 3. Minor changes and clarification to the equipment list. 4. Insignificant activities list update.
V20681.R02	Minor Revision	9/28/21	Installation of a chiller loop on the ambient air intake ductwork of Oven #18

Permitting History Detail

- 1) Permit Revision V20602.R01, removed the MACT standard for Surface Coating of Miscellaneous Parts (Subpart MMMM) from the permit. The original permit allowed the Permittee until 1/5/05 to submit an applicability notification. On 1/5/05, PCAQCD received notification that such standard was not applicable, and in accordance with section 6.C.3 (no longer an existing section of this permit), Hexcel submitted a permit revision to remove the standard from their permit. Also, since the issuance of the original permit, the MACT standard for Industrial, Commercial, and Institutional Boilers and Process Heaters (Subpart DDDDD) had been promulgated. Revision V20602.R01 incorporated the standard into the permit. A very brief summary of the changes processed through revision V20602.R01 can be found in the corresponding Technical Support Document (TSD).
- 2) Permit Revision V20602.R02, included the applicable requirements of the MACT standard for Paper and Other Web Coating (Subpart JJJJ). Permittee had requested an extension on the compliance date for this standard, since to be able to comply, they had to install permanent enclosures around some of their processes. This permit revision is issued with a compliance plan and a compliance schedule in accordance with §63.6(i)(4)(i).

To demonstrate compliance with the requirements of subpart JJJJ, Hexcel used a combination of add-on controls and the use of low-HAP materials. Coating use data was averaged across all lines, and control efficiencies were factored in where appropriate in the compliance demonstration. Permanent Total Enclosures (PTE's) were be installed around three of the affected processes to achieve compliance with JJJJ. The VOC emissions increase associated with this change was less than the 40 tons significance level, and did not trigger PSD.

- 3) Permit Revision V20602.R03, authorized the installation of the “Septum Core” process and Purge/Cure Ovens #22 and #23. While the original Title V permit for this facility (V20602.000) authorized the installation of oven #22 (see §12.B of such permit), Permittee re-submitted the oven’s information with revision R03 emissions and an applicability analysis for the installation of the oven.

The Septum Core process is used to produce a new type of honeycomb core with pieces of material, or septa, inserted and adhered into each honeycomb cell. The process involved the addition of a Septum Core Machine, 2 Septum Insertion Machines and a Septum Adhesive Cure Machine. This process emits volatile organic compounds and hazardous air pollutants due to the application and curing of adhesive. This process is subject to the requirements of 40 CFR 63 Subpart JJJJ¹ and therefore emissions are controlled using enclosures around the process and venting emissions to the oxidizer.

The 2 new ovens are hot oil heated by existing hot oil heaters. As with the existing purge/cure ovens, VOC-rich portions of the oven cycle is controlled by a thermal oxidizer and the portions of the cycle with less VOCs is vented directly to the atmosphere.

- 4) Permit Revision V20602.R04, re-authorized the installation of oven #23 previously approved by revision V20602.R03. Such oven has not been installed yet, and Permittee would like it to install it as a “double” oven. This change does not trigger any additional requirements. Also, as part of this revision, the language from Code §3-1-082, which was previously missing, was added to the permit.
- 5) Permit Revision V20602.R05, authorized the replacement of RTO #1 with a new oxidizer system. The oxidizer system capacity will be larger than the previous one, and in addition to controlling the same Purge/Cure oven emissions as the current RTO #1, Permittee will also be capturing emissions within the Dip Room that in the past went uncontrolled, and venting them to the new RTO. These previously uncontrolled emissions are:

- o Emissions from dip room vents (411-1 through, 411-5).
In the past, when there was no demand for make-up air for the purge/cure ovens, pressure relief louvers would vent the air that was captured from within the dip room to the atmosphere. Permittee will also capture these low-level, high volume VOC emissions from the pressure relief louvers and vent them to the new RTO.
- o Dip Room Blow Out Rack (stack #417)

The new oxidizer is made up of two units of 50,000 cfm each (RTO #3 and RTO #4). These units will be installed in phases to ensure there’s adequate emissions control at all times during the transition. The addition of this new RTO system and the additional capture of emission points previously vented to the atmosphere represent a decrease in VOC emissions of 39 tpy.

As part of this revision, Permittee will also be conducting the following changes: 1) the replacement of the PAA oven by a 3 MMBtu/hr oven, 2) the replacement of the fans for Purge/Cure ovens 17-21, with larger capacity fans, to decrease the length of the cycle and therefore increasing the number of cycles that can occur in a given amount of time, and 3) the addition of double oven #24, an indirect-fired natural gas oven. No additional VOCs will be emitted from the replacement of the PAA oven. The fan upgrades in ovens 17-21 represent an increase of 4.36 tpy (or 0.87 tpy per oven) in

¹ See TSD for permit revision V20602.R03 for discussion on Subpart JJJJ applicability.

potential VOC emissions, and the addition of oven #24 increases potential emissions by 17 tpy.

This revision also approved 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. This revision revised 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.

Due to the changes approved by this revision, there will be an emissions increase of 26.20 tpy of NOx due to the larger capacity of RTOs #3 and #4, the PAA oven replacement, and new oven #24.

- 6) Permit Revision V20602.R06, authorized the addition of double oven #25, an indirect-fired natural gas oven. The addition of oven #25 increased potential VOC emissions by 17 tpy.
- 7) Permit Revision V20602.R07, authorized the addition of 3 additional double capacity purge/cure ovens (#26, #27, #28), a set of Four-Block oven carts, one additional R169 dip tank (R169 Dip Tank #2), a replacement for F660 dip tank, a replacement for F124 dip tank, an additional Acousti-Cap Dip/Blot machine and removal of MACT JJJ requirements. Hexcel will also be controlling the CCC Machine #1 and #2 emissions by routing them to an existing RTO. The proposed emissions increase from this revision will be 61.29 tons per year of VOC, which exceeds the 40 tpy PSD significance threshold. Looking at the 5-year look-back of emissions increases and decreases, the net emissions increase is less than 100 tpy.

This revision is a major modification, and since Hexcel is an existing PSD major source, the facility is subject to PSD review for VOC emissions, and therefore has to apply Best Available Control Technology (BACT). The corresponding Technical Support Document for this revision includes all the information pertaining PSD review, as well as explanation on other changes made to this permit during this revision.

- 8) Renewal V20639.000, addressed the following administrative changes:
 - o Replacement of 2 MMBtu oven #460C by another natural gas oven, rated at 4 MMBtu. The emissions increase for NOx and CO will be less than 1 tpy.
- 9) Permit Revision V20639.R01, authorized the installation and operation of a soil vapor extraction unit (SVE) to clean up a methyl ethyl ketone (MEK) spill discovered in 2010. The equipment used to remediate the spill was a "Compact-THERM" thermal/catalytic oxidation system. The thermal system operates in thermal mode at high MEK concentrations (approximately 14,000 ppmV) and is switched to catalytic mode during low concentrations (below 2,000 ppmV). The manufacturer of the system indicates that the lowest destruction efficiency is 99% during thermal mode and 98% during catalytic mode. Controlled potential VOC emissions have been estimated at 25.9 lb/day or 2.35 tons per year (based on 6 months of operation).
- 10) Permit Revision V20639.A02 was an administrative amendment to correct naming nomenclature in the equipment list. Equipment ID 490 was changed from Block Oven Carts (4) to Four-Block Oven Cart (1).
- 11) Permit Revision V20639.R03, authorized several minor changes. While these changes did represent an increase in emissions, the increase was below the Significant Emission Rate. The changes did not trigger PSD, even considering increases in Greenhouse Gases. Furthermore, Hexcel did not request an increase to their current 300 tpy VOC emissions cap.

None of the changes sought with this revision triggered any additional requirements, or changes in monitoring or recordkeeping, since all the changes were subject to the same requirements as existing units. Therefore the changes are reflected in the Equipment List in Section 12 only.

This revision replaced Prime/Cure Oven #121 & #122, allowed for installation of Prime/Cure Ovens #123 & #124, installation Vacuum Bond Oven #2, installation of Hot Oil Heaters #4 & #5, removed Dust Collector #5, allowed for installation Dust Collectors #6 & #7, installation a second Acousti-Cap Dip/Blot Machine, required venting of the A-Cap Machine Dip Pans to an RTO, increased the speed and heater rating for 335 Printline #1, allowed for installation of the 335 Printline #2, increased Purge/Cure uptime via renovation/relocation, removed the SVE unit since the MEK cleanup was complete. Changes with minimal or no emissions included a 3000 gallons temporary resin storage tank for the 335 printline, addition of 10 existing septum insertion machines to the equipment list, and changing to a wider Nomex fabric

- 12) Permit Revision V20639.R04, authorized several minor changes. While these changes did represent an increase in emissions, the increase was below the Significant Emission Rate. The proposed changes did not trigger PSD, even considering increases in Greenhouse Gases. Furthermore, Hexcel did not request an increase to their current 300 tpy VOC emissions cap.

A review of past revisions, back to the issuance of the original PSD permit in 2009, found two potentially related revisions, V20639.R03 and V20639.R04. These revisions were reviewed for aggregation. Hexcel submitted information demonstrating the two revisions were economically and technically independent. Authorized emissions increases from both revisions were also combined and found to be below the Significant Emission Rates. Additional information on this analysis is included in the Technical Support Document for this revision.

None of the changes sought with this revision triggered any additional requirements, or changes in monitoring or recordkeeping, since all the changes were subject to the same requirements as existing units. Therefore the changes were primarily reflected in the Equipment List in Section 12. A summary of the changes and explanation of the emissions increases and decreases were included in the Technical Support Document for this revision.

This revision replaced Prime/Cure Ovens #121 & #122, updated the firing rate of Prime/Cure Ovens #123 and #124, removed Purge/Cure Ovens #8, #9, #10, #11 and #13, added Purge/Cure Ovens #29, #30 and #31, removed Corrugated Oven #4, added Corrugated Oven #2, removed Product Forming Oven, added RTO #5, added AI Flexcore Machine #2, added Heat Form Oven #2, added Skin Stick Machine #2, added Dust Blow Out Booth, removed USTs #16 thru #26, added ASTs #1 thru #6, added Steam Boiler #6, authorized 2.0 MMBtu/hr for comfort heating and cooling units, relocated Dust Collector #1, removed Dust Collectors #2, #3 & #7, added Dust Collectors #8, #9 and #10, added FEMCO Saws #9, #10 & #11, removed 197 Saw and 720 Graphite Saw, relocated FEMCO Saw #1, #2, #4, #5, #6, and #8, relocated 162 Saw, relocated Post Cure Oven #4, removed Vacuum Bond Oven #2, removed Nomex Change option, removed the Cooling Lane portion of Project Jalapeno.

- 13) Permit Revision V20639.R05, authorized several changes. Hexcel is planning to expand the operation at the Casa Grande Facility. The approved project includes 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 current combined setup, elimination of VOC laden air as a source of makeup air to the ovens, and adding support equipment for the new and/or modified ovens. In an effort to improve employee safety as well as reduce emissions from the Casa Grande Facility, the project includes a new process design to minimize emissions by upgrading the VOC emission control measures on new and existing equipment. While these changes did represent an increase in potential emissions, the increase was below the Significant Emission Rate. The proposed changes do not trigger PSD, even considering increases in Greenhouse Gases. Furthermore, Hexcel did not request an increase to their current 300 tpy VOC emissions cap. A review of past revisions, back to the issuance of the original PSD permit in 2009, found three potentially related revisions, V20639.R03, V20639.R04 and V20639.R05. These revisions were reviewed for aggregation. Hexcel submitted information demonstrating the three revisions were economically and technically independent

The revision authorized the addition of several pieces of equipment and removed a diesel-fired emergency generator and a diesel-fired emergency air compressor. The revision also lowered the calculated potential emissions from RTO #2, #3 and #4 by changing the reported design heat input. Research determined that a mathematical error in historical applications lead to the incorrect capacities. 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. The Technical Support Document for this revision provides of summary of the equipment changes.

- 14) Permit Renewal V20661.000, incorporated the management practices and reporting obligations required by NESHAP Subpart WWWW in relation to two processes involving chromium solutions.
- 15) Permit Revision V20661.R01, clarified the timeline for routing the existing Acousti-Cap Dip/Blot machine enclosure vent pipe to a RTO and for routing the secondary enclosures in the existing mix rooms along with redesigned mix tanks to a RTO.
- 16) Permit Revision V20661.R02, clarified the terms combustion zone and residence time, changed some reporting timelines from mid-month to month's end, renamed the Partswasher-Remote Reservoir to the Corrugated Pin Cleaning Hood and reduced the capacity, updated the list of parts washers and reduced the overall capacity, reauthorized Dust Collector #5 and removed Dust Collector #6, and removed the UD Tapeline, Ceramic Prepeg Line and Flow Coat Booth. The requirements of NSPS VVV were also removed since these provisions only applied to the UD Tapeline and Ceramic Prepeg Line.
- 17) Permit Revision V20661.R03, reinserted six underground storage tanks (USTs) into the equipment list. Permit V20639.R04 in December 2013 added six above ground storage tanks (ASTs) and removed eleven USTs from the equipment list. Permit V20639.R05 in September 2014 added six additional ASTs to the equipment list. This revision, V20661.R03 reinserted six of the removed USTs into the equipment list as they were still needed during the transition from USTs to ASTs. All the chemicals that were to be stored in the USTs were currently permitted to be stored in ASTs thus no additional monitoring, recordkeeping or reporting was required.

The combined PTE attributable to evaporation from the additional six USTs was minimal at 1.82 tpy. The potential additional storage capacity for raw products does not change the production capacity since there are several bottlenecks in the process, including but not limited to the ovens. Since the process PTE is already based on the full capacity of downstream items, such as the ovens, adding to the chemical storage capacity did not change the process PTE.

- 18) Permit Revision V20661.R04, relabeled the heat input of the RTOs in the equipment list and confirmed that previous PTE calculations took into account the correct heat input ratings during start-up and steady state operation. This revision also changed the reoccurring test cycle to determine formaldehyde and phenol destruction efficiency to once every five years, the total VOC destruction efficiency reoccurring test cycle remains at once a year. Additionally a material roborant that directly emits ozone was also added to the equipment list.
- 19) Permit Revision V20661.R05, updated the Compliance Assurance Monitoring (CAM) provisions in Section §7.D.3 of the permit to address the short distance of positive static pressure with respect to the design of the new RTO #5 and RTO #6.
- 20) Permit Renewal V20681.000 authorized the facility to use ambient air or dip room air to cool off the cured blocks in the existing ovens. This permit also updated the equipment list without making changes to the number of permitted oven equivalents and without changing the oven emission profile. Purge Cure Oven #31 (double) was added back into the equipment list, as the authority to construct this oven was approved under Permit Revision V20639.R04. The authority to operate the Four Block Oven Cart that made Oven #24 a quad oven was removed. Purge Cure Oven #32 (single) was added to the equipment list in place of Purge Oven #8 and Cure Oven #24 was reduced to a single oven to keep the oven equivalents the same.
- 21) Minor Permit Revision V20681.R01 authorized the following changes:
 1. Mix Room 66 and Mix Room 73 can be controlled for VOCs either at the room level or at the mixing vats, or at the tank level.
 2. Acousti-cap enclosures can either conduct testing after commissioning or remain connected to the RTO and meet the capture and destruction efficiency required by the permit.
 3. Minor changes and clarification to the equipment list.
 4. Insignificant activities list update.

- 22) Minor Permit Revision V20681.R02 authorizes the installation and operation of a chiller loop to the ambient air intake on Oven #18.

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 its permit. 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 compliance
6/13/17	Compliance Inspection	In compliance
5/24/19	Compliance Inspection	In compliance

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.

3. EMISSIONS

3.1 Equipment changes involving emissions

As approved in Permit #V20681.000, Hexcel is proposing to replace the use of dip room air in cooling phase of the purge/cure cycle with outside ambient air, which is expected to reduce the VOC emissions to ambient air during that phase. Because of the differences in temperature between the air inside the dip room as well as ambient air, this proposed change may increase the historic cooling rate and associated production in winter months (when the ambient temperature is less than the dip room temperature) and decrease the historic cooling rate and associated production in summer months (when the ambient temperature is greater than the dip room temperature).

The change in emissions of Regulated Air Pollutants as a result of the proposed change are associated with VOCs only. Emissions associated with the proposed change are calculated using the methodologies described in the application. For purposes of this evaluation, Hexcel is using 2018 as a representative year for operations purposes. Hexcel is also utilizing the results of source testing completed in August 2012 at Oven #18 to evaluate the amount of emissions associated with the cooling of the purge/cure cycle. Detailed emissions calculations are presented in Appendix A of the application.

Using the correlation developed in Figure 6-2 of the application. Hexcel estimated the cooling phase duration when using dip room air and when using ambient air. Hexcel identified that the total cooling phase duration in 2018 is as follows:

- 9,731 total cooling minutes per oven when using only dip room air; and

- 8,709 total cooling minutes per oven when using only ambient air

(i.e., the proposed change is expected to reduce the annual cooling phase duration per oven by approximately 11%, which can potentially increase the number of cycles per oven and associated emissions).

In August 2012 Hexcel completed a stack testing campaign on Oven #18 to determine the VOC emissions from the cooling phase of the purge/cure cycle (i.e., emissions of VOC contained in the “make-up air” from the dip room that is being vented using the oven bypass). Based on the results of the August 2012 test, Hexcel estimates that the VOC emission rate is 0.19 lb VOC/min.

The emissions increase due to this proposed change are calculate as follows:

- Annual Cooling Duration Reduction = $9,731 - 8,709 = 1,022$ min/evaluation period/oven
- The evaluation period = 310 days in 2018
- The Adjusted Annual Cooling Duration Reduction = $1,022 / 310 * 365 = 1,204$ min/yr/oven
- The Average Cooling Duration Per Cycle is reduced by 11% due to the use of ambient air from 26.43 minutes/cycle to 23.65 minutes/cycle.
- Therefore, the Annual Increase in Production Cycles is = $(1,204 \text{ min/yr/oven}) / (23.65 \text{ min/cycle}) = 51$ cycles/oven/yr.

As noted above, the emission rate using the dip room “make-up air” is 0.19 lb VOC/min. Therefore, by ignoring the fact the ambient air replacing the dip room air may not contain VOC and conservatively assuming the same historic emission rates from the dip room make-up air, the VOC Emissions Increase = $(23.65 \text{ min/cycles}) \times (51 \text{ additional cycles/oven/yr}) \times (0.19 \text{ lb VOC/min}) / (2,000 \text{ lb/ton}) = 0.11$ tpy/oven.

In order to develop a PTE evaluation for the emission increase the value above is multiplied by the current PTE number of “oven equivalents” at the Casa Grande Facility (i.e., 48 “oven equivalents”) rather than the actual number of “oven equivalents” currently in operations. Therefore, the emission increase = $(0.11 \text{ tpy/oven}) \times (48 \text{ ovens}) = 5.40$ tpy of VOC.

The proposed change does not require any adjustment to the current conditions in permit. Instead the proposed change is intended to allow Hexcel to retrofit the existing ovens to utilize an ambient air intake and reduce the VOC emissions associated with the current practice of utilizing “make up” air from the dip room. Because of the timeline associated with evaluating and executing this change at all ovens, Hexcel requests that the historic dip room cooling provisions in permit V20661.R05 remain unchanged.

Minor Revision V20681.R02 changes the tons/year/oven emission increase for only Oven #18 so that a chiller loop can be tested on the ambient intake of this oven. The oven #18 emission increase will be 0.44tpy instead of 0.11 tpy. The emission increase associated with V20681.000, V20681.R01 and V20681.R02 will then be $5.40 \text{ tpy} - 0.11 \text{ tpy} + 0.44 \text{ tpy} = 5.73$ tpy.

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 also 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 revision since no changes are being proposed to the 300 tpy VOC cap.

4.2 Compliance Assurance Monitoring (CAM)

This renewal updates the Quality Improvement Plan (QIP) trigger to 5% and defines the assessment period as quarterly

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

4.5 Title V Operating Permit Equipment List

None

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
CO _{2e}	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-pyrrolidone
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
PM _{2.5}	Particulate Matter nominally less than 2.5 Micrometers
PM ₁₀	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