

## **NARRATIVE**

TO: Jeng-Hon Su  
FROM: Eddie Gomez  
DATE: May 29, 2023

Facility Name: Hanwha Advanced Materials Georgia, Inc.  
AIRS No.: 015-00153  
Location: White, GA (Bartow County)  
Application #: 28817  
Date of Application: April 6, 2023

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### **Background Information**

Hanwha Advanced Materials Georgia, Inc. (hereinafter “facility”) is a planned synthetic minor facility located at 251 Great Valley Parkway, White, Georgia 30184 (Bartow County). Bartow County is part of the former Atlanta Ozone non-attainment area and is in attainment for all other criteria pollutants. The facility plans to manufacture Ethyl Vinyl Acetate (EVA) film and back sheets on eight EVA film production lines and one back sheet production line.

EVA resin is mixed with additives and stabilizing liquid. The mixture is then sent through the extruder and T-Die process to convert the substances into a gel, which forms the EVA film at the required thickness. This film is annealed to relieve internal stresses. A surface pattern is created, the film is cooled, and the film is wound into rolls per customer specifications. This product is packaged and moved to storage. Several dust collectors are used to control particulate matter (PM) emissions from the loading/unloading and processing operations. Volatile Organic Compounds (VOC) emissions are controlled by activated carbon (AC) towers.

Adhesives, a curing agent, and solvents are mixed and coated on the first film. This film then passes through a dryer to remove any residual solvents/adhesives. A second film is then applied to this substance before they are both laminated. The resulting film mixture is then rewound and allowed to cure for the adhesives between the films to act properly. The sheet then passes through a slitter to generate multiple sheets based on customer specifications and packed for storage. VOC emissions are expected from the mixing, coating, and drying operations. PM emissions are expected from the mixing operations. The VOC emissions will be controlled by an AC tower.

### **Purpose of Application**

On April 6, 2023, the facility submitted Application No. 28817 for the construction and operation of an EVA film and back sheet manufacturer.

**Updated Equipment List**

Emission Units			Associated Control Devices	
Source Code	Description	Installation Date	Source Code	Description
EVA01*	EVA Sheet Processing Line 1	2023	DC01 DC05 DC07 AC01 AC03 AC05	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA02*	EVA Sheet Processing Line 2	2023	DC01 DC05 DC07 AC01 AC03 AC06	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA03*	EVA Sheet Processing Line 3	2023	DC02 DC05 DC07 AC01 AC03 AC07	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA04*	EVA Sheet Processing Line 4	2023	DC02 DC05 DC07 AC01 AC03 AC08	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA05*	EVA Sheet Processing Line 5	2023	DC03 DC06 DC08 AC02 AC04 AC09	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA06*	EVA Sheet Processing Line 6	2023	DC03 DC06 DC08 AC02 AC04 AC10	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA07*	EVA Sheet Processing Line 7	2023	DC04 DC06 DC08 AC02 AC04 AC11	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
EVA08*	EVA Sheet Processing Line 8	2023	DC04 DC06 DC08 AC02 AC04 AC12	Dust Collector Dust Collector Dust Collector AC Tower AC Tower AC Tower
BS01*	Backsheet Processing Line 1	2023	AC13	AC Tower

\*proposed within current application

**Fuel Burning Equipment**

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
INB01*	3.83	Backsheet line Boiler B01	2023	2023
INB02*	3.83	Backsheet line Boiler B02	2023	2023
INB03*	3.83	Backsheet line Boiler B03	2023	2023

\*Proposed within current application

**Fuel Burning Sources**

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
FP01*	0.60	Emergency fire pump	2023	2023

\*Proposed within current application

**Emissions Summary****Facility-Wide Emissions**  
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0	14.9	14.9	0	14.9	14.9
NO <sub>x</sub>	0	5.3	5.3	0	5.3	5.3
SO <sub>2</sub>	0	0.2	0.2	0	0.2	0.2
CO	0	4.6	4.6	0	4.6	4.6
VOC	0	<100	<100	0	40.6	40.6
Max. Individual HAP	0	<10	<10	0	<10	<10
Total HAP	0	<25	<25	0	<25	<25
Total GHG (if applicable)	0	5,910	5,910	0	5,910	5,910

**Regulatory Applicability****Federal Rules:**

The backsheet line boilers (ID Nos. INB01 through INB03) are each rated at less than 10 million British Thermal Units per hour (MMBtu/hr.). Therefore, 40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units does not apply.

The facility's potential to emit (PTE) levels will be capped below 25 tpy for combined Hazardous Air Pollutants (HAP), and 10 tpy for individual HAP. Thus, the facility will be an area source of HAP emissions.

The emergency fire pump (ID No. FP1) is at an area source of HAP emissions and to be installed after July 1, 2006. Therefore 40 CFR 60 Subpart IIII restricts the fuel to be used in FP1 to Ultra Low Sulfur Diesel (ULSD) fuel that contains a maximum sulfur content of 15 ppm, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. Subpart IIII also requires the installation of a non-resettable hour meter, operation, and maintenance of FP1 in accordance with written instructions from the manufacturer, limiting maintenance, readiness, and other non-emergency operation of the engine to 100 hours per year, and maintenance of records of the purpose of engine operation.

The facility is not subject to any other New Source Performance Standards (NSPS) in 40 CFR 60.

The emergency fire pump (ID No. FP1) will be a 200-horsepower engine at an area source of HAP emissions to be installed after June 12, 2006. Therefore, 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines considers FP1 as a new existing emergency stationary source under the Stationary Reciprocating Internal Combustion Engines (RICE) Maximum Achievable Control Technology (MACT) standards and subject to 40 CFR 60 Subpart IIII.

The backsheet line boilers (ID Nos. INB01 through INB03) each fire natural gas exclusively, and therefore meet the definition of gas fired boilers. Thus, 40 CFR 63 Subpart JJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial Commercial, and Institutional Boilers Area Sources, does not apply.

Because the facility is considered an area source of HAP emissions, it is not subject to any of the MACT standards in 40 CFR 63 for a HAP major source. The facility is not subject to any other GACT standards in 40 CFR 63 for a HAP area source, either.

**Georgia State Rules:****Georgia Rules for Air Quality Control (GRAQC) 391-3-1-.02(2)(b) – Visible Emissions**

The process equipment is subject to GA Rule (b). The nature of solar module manufacturing operations are unlikely to generate high opacity emissions; therefore, compliance with the GA Rule (b) visible emission limit is expected.

Georgia Rules for Air Quality Control (GRAQC) 391-3-1-.02(2)(d) – Fuel-Burning Equipment

Since the primary purpose of the boilers (ID Nos. INB01 through INB03) is production of thermal energy from the combustion of fuel (natural gas) with heat furnished indirectly through transmission through process walls (combustion exhaust heats water through piping/vessel walls), the boilers meet the definition of “fuel-burning equipment” specified in GA Rule 391-3-1-.01(cc). Thus, all boilers are subject to GA Rule (d) for the visible emission limits and PM emission standards. Since they all burn natural gas, and natural gas is considered a clean fuel, compliance with the GA Rule (d) limits is expected.

GRAQC 391-3-1-.02(2)(e) – Particulate Emissions from Manufacturing Processes

As part of manufacturing processes, equipment at this facility is subject to GA Rule (e). The Division agrees with the facility that the control devices at the facility will not emit much PM. Therefore, equipment operation is expected to comply with the GA Rule (e) PM emission standard.

GRAQ 391-3-1-.02(2)(g) – Sulfur Dioxide

The Georgia Sulfur Dioxide Rule states that all fuel burning sources operating with a heat input of less than 100 MMBtu/hr. shall not burn fuel which contains more than 2.5 percent sulfur by weight.

The emergency fire-pump (ID No. FP01) is subject to this rule. Because FP01 will fire diesel exclusively, and diesel contains no more than 0.5% sulfur, the engine is expected to comply.

The boilers (ID Nos. INB01 through INB03) are also subject to the fuel sulfur content limit specified in GA Rule (g). Since the boilers fire exclusively on natural gas, and natural gas contains minimum amounts of sulfur, compliance with the GA Rule (g) limit is expected for the boilers.

GRAQ 391-3-1-.02(2)(tt) – VOC Emissions from Major Sources

The facility is located in Bartow County, and it proposed a facility-wide VOC limit below 100 tpy. Per GA Rule 391-3-1-.02(2)(tt)3., the reasonably available control technology (RACT) requirements specified in GA Rule (tt) do not apply to the facility.

**Permit Conditions**

Because mass balance only tracks VOC emissions from material consumption but not fuel combustion emission from devices like the boilers, which are estimated to emit less than 1 tpy of VOC, Condition 2.1 limits measured emissions of VOC to less than 99 tons per year (tpy). This allows the facility to be classified as a VOC synthetic minor source under Title V of the 1990 Clean Air Act Amendments (CAAA). The facility must track all VOC actual emissions in accordance with Conditions 7.2 and 7.4 through 7.6 for the new lines.

Condition 2.2 limits the individual HAP emissions to less than 10 tpy for an individual HAP emission and less than 25 tpy for combined HAP emissions. This allows the facility to avoid being Title V major for

single and combined HAP. The facility must track all HAP actual emissions in accordance with Conditions 7.8 through 7.10 for the new lines.

Condition 2.3 subjects the facility to an opacity limit of 40% per GA Rule (b).

Condition 2.4 subjects the facility to the PM and opacity requirements of GA Rule (e).

The boilers (ID Nos. INB01 through INB03) meet the definition of fuel-burning equipment in GA Rule 391-3-1-.01(cc). Therefore, Condition 2.5 subjects the facility to GA Rule (d).

Condition 2.6 restricts fuel-burning equipment at the facility to natural gas to comply with GA Rule (g). The fuel requirement is also needed to avoid being subject to 40 CFR 63 Subpart JJJJJ.

Condition 2.7 requires the facility to operate the AC towers (ID Nos. AC01 through AC13) at all times the associated process equipment is in operation for avoidance of 40 CFR Part 70 applicability.

Condition 3.1 is the general fugitive emission requirement under Georgia Rule (n).

Condition 4.1 is a general condition that requires the facility to perform routine maintenance in order to keep air pollution control equipment in good working order.

Condition 5.1 lists the monitoring parameters and frequency of data collection for the Dust Collectors (ID Nos. DC01 through DC08) and AC towers (ID Nos. AC01 through AC13).

Condition 5.2 requires the facility to develop a written work practice plan to monitor the concentration of VOC at the exit of each AC tower weekly and to replace the carbon in the unit(s) when the VOC concentration exceeds the parts per million on a volume basis (ppmv) value specified in the work practice plan within 15 days of such reading. The facility must submit the plan to the Division for approval within 90 days after the initial startup of the facility.

Condition 6.2 requires the facility to conduct performance testing for VOC emissions from the AC towers (ID Nos. AC01 through AC13) within 120 days of facility startup in order to verify that the facility's VOC emissions are below 100 tpy. Because the Division concurred with the facility findings that hydrogen chloride, formaldehyde, and acetaldehyde are the only HAP emitted from the facility in significant amounts, Condition 6.2 also requires the facility to conduct performance testing for hydrogen chloride, formaldehyde, and acetaldehyde from the AC towers (ID Nos. AC01 through AC13) within 120 days of facility startup in order to verify that the facility's emissions of HAP are less than 10 tpy for an individual HAP emission and less than 25 tpy for combined HAP emissions. Note that the facility only needs to test one AC bed for each group identified in Condition 6.2.

Condition 7.1 requires the facility to notify the Division upon initial startup of the facility.

Condition 7.2 requires the facility to maintain a record of the total pounds of product produced per month.

Condition 7.3 is a general requirement for the facility to maintain measurements.

Condition 7.4 outlines the emission calculation protocol to be used to incorporate the VOC emission factor to calculate VOC emissions from the entire facility.

Conditions 7.5 and 7.6 require the facility to calculate monthly and 12 month rolling total VOC emissions.

Condition 7.7 requires the facility to maintain a log for carbon replacement in the AC tower.

Condition 7.8 outlines the emission calculation protocol to be used to calculate HAP emissions from the entire facility.

Conditions 7.9 and 7.10 require the facility to calculate monthly and 12 month rolling total of single HAP emissions and combined HAP emissions.

Condition 7.11 outlines the information required for semi-annual report submittal.

Condition 8.1 is a general condition that applies to all Georgia air permits.

Condition 8.2 requires the facility to calculate and pay air permit fees.

### **Toxic Impact Assessment**

The proposed EVA film production and backsheet production processes will emit eight Toxic Air Pollutants (TAP), hydrogen chloride, formaldehyde, acetaldehyde, acetone, xylene, ethyl alcohol, ethyl acetate, and methyl ethyl ketone. The facility wide emissions of these compounds are presented in the table below.

**Table 5: Facility-wide HAP/TAP PTE and MER Comparison**

<b>Chemical Name</b>	<b>CAS No.</b>	<b>Facility-wide Emissions (lb./yr.)</b>	<b>Minimum Emission Rate (MER) (lb./yr.)</b>	<b>Emissions Greater Than MER?</b>
Hydrogen Chloride	76-47-010	239	4,870	No
Formaldehyde	50-00-0	858	267	<b>Yes</b>
Acetaldehyde	75-07-0	904	1,110	No
Acetone	67-64-1	244	278,000	No
Xylene	10-83-83	538	24,300	No
Ethyl alcohol	64-17-5	244	219,000	No
Ethyl acetate	14-17-86	40,981	162,000	No
Methyl ethyl ketone	78-93-3	40,981	1,220,000	No

As demonstrated in the table above, the emissions of formaldehyde are at levels which exceed the Minimum Emissions Rate (MER) thresholds. Therefore, modeling was conducted via Screen 3 to make sure the Maximum Ground Level Concentrations (MGLC) of this TAP were below the Acceptable Ambient Concentration (AAC). The results of this assessment are presented in the following table.

**Table 6: Screen 3 Results**

<b>Chemical Name</b>	<b>Long Term Averaging Period</b>	<b>Long Term MGLC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Long Term AAC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>15-min MGLC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>15-min AAC (<math>\mu\text{g}/\text{m}^3</math>)</b>
Formaldehyde	Annual	0.201	1.10	3.32	245





**Summary & Recommendations**

I recommend that Permit No. 3674-015-0150-S-01-0 be issued to the facility. A Public Advisory was issued on April 12, 2023, and comments were due by May 12, 2023, no comments were received. The Stationary Source Compliance Program (SSCP) is responsible for inspections and complaints/investigations.

**Addendum to Narrative**

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.