September 5, 2018

Ms. Michelle Owenby
Division of Air Pollution Control
Tennessee Department of Environment & Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

Subject: Hormann LLC
True Minor Permit Application
New Facility in Sparta, TN

Dear Ms. Owenby,

With this letter, Hormann LLC (Hormann) submits a construction permit application for a True Minor facility for the manufacturing of garage doors. The facility will consist of five (5) emission sources for the production of insulated garage doors with custom options for dimensions, style, and color. The emission sources are listed below and described in detail in the attached APC 100 form and visually in the attached process flow diagram. Application pages and emission calculations for each individual source are also attached.

The following emission sources are included in the application:

Source 001	Forming Door Hardware
Source 002	EPS Foam Panel Imprinting and Gluing
Source 003	Polyurethane Foam Injection, Heat Tunnel and Sawing
Source 004	Custom Paint Application
Source 005	12,000 gallon Pentane (blowing agent) Tank Recirculation Loop Component Fugitives

Sources 002 and 003 will require a permit for installation and operation. However, Sources 001, 004, and 005 meet the definition of insignificant activity in TAPCR 1200-03-09-.04(2)(a)3 and 1200-03-09-.04(4)(a) which states that activities that emit less than 5 tons per year of regulated pollutants and less than 1,000 pounds per year of a hazardous pollutant are insignificant and are, therefore, exempt from permitting. Based on this information, Hormann requests that TDEC make a determination of insignificant status and exemption from permitting for Sources 001, 004, and 005. Application pages and calculations for each of these sources are attached.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

If you have questions or comments, please contact Ethan Herman, Project Engineer at (423) 337-3993, or my consultant, Shea Cofer at (615) 418-1414.

Sincerely,

Camron Rudd
President

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION

Type or print and submit. Attach appropriate source description forms.

SITE INFORMATION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Site name (if different from legal name)

3. Is a construction permit application fee being submitted? Yes [✓] No [ ]
(see instructions for appropriate fee to submit)

4. Site address (St./Rd./Hwy.)		County name
420 Airport Road		White
City	Zip code	**5.** NAICS or SIC code
Sparta	38583	332321

6. Site location (in lat. /long.)	Latitude	Longitude
	36.05565 N	85.52171 W

CONTACT INFORMATION (RESPONSIBLE PERSON)

7. Responsible person/Authorized contact			Phone number with area code
Camron Rudd			(630) 859-3000
Mailing address (St./Rd./Hwy.)			Fax number with area code
5050 Baseline Rd			
City	State	Zip code	Email address
Montgomery	IL	60538	c.rudd@hormann.us

CONTACT INFORMATION (TECHNICAL)

8. Principal technical contact			Phone number with area code
Ethan Herman			(630) 859-3000 ext. 160
Mailing address (St./Rd./Hwy.)			Fax number with area code
5050 Baseline Rd			(630) 859-8122
City	State	Zip code	Email address
Montgomery	IL	60538	e.herman@hormann.us

CONTACT INFORMATION (BILLING)

9. Billing contact			Phone number with area code
Dana Bavilacqua			(630) 859-3000 ext. 152
Mailing address (St./Rd./Hwy.)			Fax number with area code
5050 Baseline Rd			
City	State	Zip code	Email address
Montgomery	IL	60538	d.bavilacqua@hormann.us

AIR CONTAMINANT SOURCE(S) INFORMATION

10. Description of air contaminant source(s) and Unique Source ID(s). List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

The Garage Door Manufacturing facility will have 5 processes which are potential air contaminant sources. Three will qualify as insignificant activities due to their low potential emissions, and two require an air permit.

Source	Description
001	Galvanized steel coil is formed into door hardware - Insignificant Activity
002	EPS Foam Panel Imprinting and Gluing Operation: EPS foam panels are imprinted or embossed to the shape of the garage door. Emissions are from the foam burned away in the impressions and gluing to the metal door panels.
003	Polyurethane Foam Injection, Heat Tunnel, and Sawing Operation: Polyurethane foam is injected into a cavity between two door panels resulting in a release of VOC emissions. Foam is cured in a NG fired Heat Tunnel. Sections are cut in the sawing process and a baghouse controls particulate emissions.
004	Custom Paint Application: A small custom painting operation with spray booth and NG fired cure oven and replacement air unit. - Insignificant Activity
005	12,000 gallon Pentane (Blowing Agent) Tank Recirculation Loop Component Leaks - Fugitive Emissions - Insignificant Activity

11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed. Yes ☐ No ☑

12. Normal operation:	Hours/Day 24	Days/Week 7	Weeks/Year 52	Days/Year 365
13. Percent annual throughput	Dec. – Feb. 25	March – May 25	June – August 25	Sept. – Nov. 25

TYPE OF PERMIT REQUESTED (check appropriate box)

14. Operating permit ☐	Date construction started	Date completed	Date of ownership change (if applicable)
	Last permit number(s)	Emission Source Reference Number(s)	
Construction permit ☑	Last permit number(s) New Facility	Emission Source Reference Number(s)	

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

New Construction ☑	Starting date September 2018	Completion date December 2019
Modification ☐	Date modification started or will start	Date completed or will complete
Location Transfer ☐	Transfer date	Address of last location

15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:

16. Comments

SIGNATURE

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

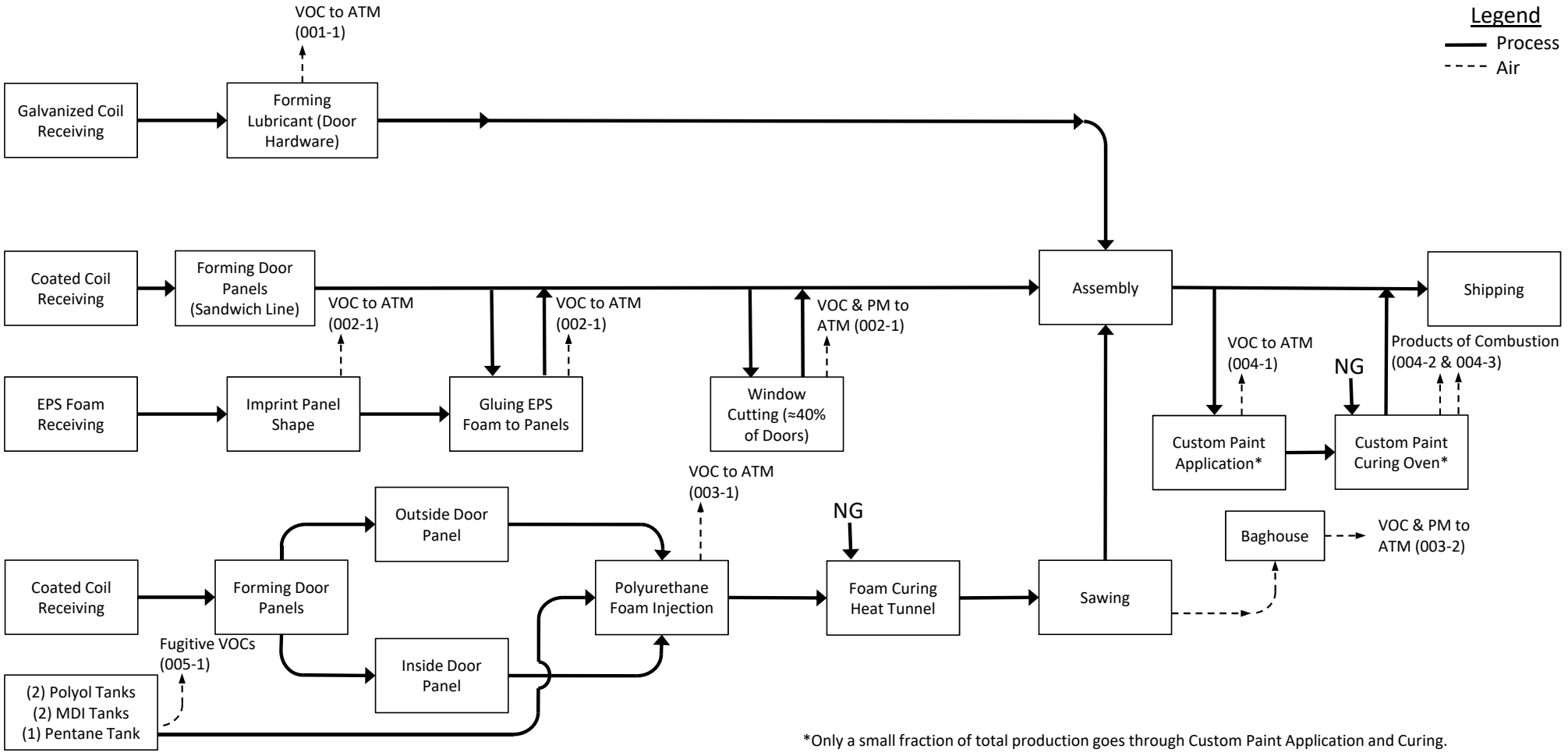
17. Signature (application must be signed before it will be processed)	**Date**
	17 Sept. 2018

Signer's name (type or print)	**Title**	**Phone number with area code**
Camron Rudd	President, Hörmann LLC	630-518-0623

Plantwide Emission Summary
Hormann LLC
Sparta, TN

Source	Description	Criteria Poluttant Emissions (tpy)							CO2eq	Hazardous Air Pollutant (HAP) Emissions		
		TSP[2]	PM10[2]	PM2.5[2]	NOx	VOC	SO2	CO		Methylene Diphenyl Diisocyanate (MDI) CAS:101-68-8	Styrene CAS:100-42-5	Total HAPs
001 (insignificant)	Forming Door Hardware	--	--	--	--	0.21	--	--	--	--	--	0.00
002	EPS Foam Panel Imprinting and Gluing Operation[1]	--	--	--	--	4.89	--	--	--	3.10	0.03	3.13
003	Polyurethane Foam Injection, Heat Tunnel, and Sawing Operation	2.57	2.57	2.57	0.26	25.87	0.002	0.22	318.37	0.001	--	0.001
004 (insignificant)	Custom Paint Application (Includes Paint Cure Oven Burner and Replacement Air Unit Combustion Emissions)	0.18	0.18	0.18	2.36	4.48	0.01	1.98	2,850.96	--	--	0.00
005 (insignificant)	12,000 gal Pentane (Blowing Agent) Tank Recirc Loop Components	--	--	--	--	0.58	--	--	--	--	--	0.00
	Totals =	**2.75**	**2.75**	**2.75**	**2.63**	**36.03**	**0.02**	**2.20**	**3,169.33**	**3.10**	**0.03**	**3.13**

Note:
1) Source 002 VOC emission calculations based on maximum garage door production of 80,000 Doors per Year
2) TSP, PM10 and PM2.5 include filterable and condensable particulate matter.



STEVENS ENVIRONMENTAL CONSULTING

Hormann LLC
Facility Process Flow Diagram

Date: July 2018
Edited By: HLH

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
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NON-TITLE V PERMIT APPLICATION
PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Type or print. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Emission Source Reference Number

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

4. Unique Source ID (see instructions)
001 Forming Door Hardware

5. Unique Emission Point ID (see instructions)
001-1

6. Description of air contaminant source
Galvanized steel coil is formed into door hardware. Forming lubricant releases VOCs. - Insignificant Activity

7. Type of air contaminant source (Check only one option to the right)

Process Emission Source: For each process emission source, submit a separate application. (Check at right and complete lines 8, 9, and 14)	☑
Process Emission Source with in process fuel: Products of combustion contact materials heated. For each process emission source, submit a separate application. (Check at right and complete lines 8 through 14)	☐
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 10 through 14)	☐

PROCESS EMISSION SOURCE DESCRIPTION AND DATA

8. Type of operation: Continuous ☑ Batch ☐

Normal batch time	Normal batches/day

9. Process material inputs and In-process solid fuels	Diagram reference	Input rates (pounds/hour) Design	Actual
A. 921 DS 1MO CANT RUST (M2)	001-1	390 LB/YEAR	390 LB/YEAR
B. 251 ROLL FILM	001-1	66.7 LB/YEAR	66.7 LB/YEAR
C.			
D.			
E.			
F.			
G.			
Totals		459.7 LB/YEAR	459.7 LB/YEAR

* A simple process flow diagram must be attached.

DESCRIPTION OF BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

10. Boiler or burner data: (Complete lines 10 through 14 using a separate form for each boiler, burner, etc.)

Serial Number	Type of firing***

Rated horsepower	Rated input capacity (10^6 BTU/Hr.)	Other rating (specify capacity and units)

Date constructed	Date manufactured	Date of last modification (explain in comments below)

** Source with a common stack will have the same stack number.

*** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments).

FUEL USED IN BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

11. Fuel data: (Complete for a process emission source with in process fuel or a non-process fuel burning source)

Primary fuel type (specify) | Standby fuel type(s) (specify)

Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel		(For APC use only) SCC code
		Design	Average					
Natural gas:	10^6 Cu. Ft.	Cu. Ft.	Cu. Ft.	////////// //////////	///// /////	1,000		
#2 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#5 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#6 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons	Lbs.	Lbs.	////////// //////////	///// /////			
Liquid propane:	10^3 Gal.	Gal.	Gal.	//////// ////////	///// /////	85,000		
Other (specify type & units):								

12. If Wood is used as a fuel, specify types and estimate percent by weight of bark

13. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.

14. Comments

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

15. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Camron Rudd	**Title** President, Hormann LLC	**Phone number with area code** 630-518-0623

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

001 Forming Door Hardware

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

001-1

4. Brief description of air contaminant source (Attach a diagram if appropriate):

Galvanized steel coil is formed into door hardware. Forming lubricant releases VOCs. - Insignificant Activity

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	N/A	N/A	N/A	N/A	N/A

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	N/A	N/A	N/A	N/A

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	N/A	N/A	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO_2)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM	0.21	0.21	2	000	N/A
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

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Signer's name (type or print) Camron Rudd	**Title** President, Hormann LLC	**Phone number with area code** 630-513-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source 001
Forming Door Hardware
VOC Emissions from Forming lubricant for galvanized coil forming (Insignificant Activity)

Operating Parameters
Hours of Operation 8,760 hrs/yr

Lubricant Name	Annual Usage (gal)	Material Density (lb/gal)	VOC Content (%)	VOC Emissions	
				lb/year	TPY
921 DS 1MO CANT RUST (M2)	55	7.089	90%	350.9	0.18
251 ROLL FILM	10	6.672	99%	66.1	0.03
				Total	**0.21**

Example Calculation:
VOC Emissions = Annual Usage (gal) x Material Density (lb/gal) x VOC Content (%)

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NON-TITLE V PERMIT APPLICATION
PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Type or print. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Emission Source Reference Number

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

4. Unique Source ID (see instructions)
002 EPS Foam Panel Imprinting and Gluing Operation

5. Unique Emission Point ID (see instructions)
002-1

6. Description of air contaminant source

EPS Foam Panel Imprinting and Gluing Operation: EPS foam panels are imprinted or embossed to the shape of the garage door. Emissions are from the foam burned away in the impressions and gluing to the metal door panels.

7. Type of air contaminant source (Check only one option to the right)

Process Emission Source: For each process emission source, submit a separate application. (Check at right and complete lines 8, 9, and 14)	☑
Process Emission Source with in process fuel: Products of combustion contact materials heated. For each process emission source, submit a separate application. (Check at right and complete lines 8 through 14)	☐
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 10 through 14)	☐

PROCESS EMISSION SOURCE DESCRIPTION AND DATA

8. Type of operation: Continuous ☑ Batch ☐

Normal batch time	Normal batches/day

9. Process material inputs and In-process solid fuels	Diagram reference	Input rates (pounds/hour) Design	Actual
A. N/A (Foam Panel Imprinting)	(002-1)	200	200
B. PURMELT 513C GLUE	(002-1)	7.07	7.07
C.			
D.			
E.			
F.			
G.			
Totals		7.07	7.07

* A simple process flow diagram must be attached.

DESCRIPTION OF BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

10. Boiler or burner data: (Complete lines 10 through 14 using a separate form for each boiler, burner, etc.)

Serial Number	Type of firing***

Rated horsepower	Rated input capacity (10^6 BTU/Hr.)	Other rating (specify capacity and units)

Date constructed	Date manufactured	Date of last modification (explain in comments below)

** Source with a common stack will have the same stack number.

*** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments).

FUEL USED IN BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

11. Fuel data: (Complete for a process emission source with in process fuel or a non-process fuel burning source)

Primary fuel type (specify) | Standby fuel type(s) (specify)

Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel		(For APC use only) SCC code
		Design	Average					
Natural gas:	10^6 Cu. Ft.	Cu. Ft.	Cu. Ft.	////////// //////////	///// /////	1,000		
#2 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#5 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#6 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons	Lbs.	Lbs.	////////// //////////	///// /////			
Liquid propane:	10^3 Gal.	Gal.	Gal.	//////// ////////	///// /////	85,000		
Other (specify type & units):								

12. If Wood is used as a fuel, specify types and estimate percent by weight of bark

13. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.

14. Comments

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15. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Cameron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-518-0623

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NON-TITLE V PERMIT APPLICATION
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Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

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1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

002 EPS Foam Panel Imprinting and Gluing Operation

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

002-1

4. Brief description of air contaminant source (Attach a diagram if appropriate):

EPS Foam Panel Imprinting and Gluing Operation: EPS foam panels are imprinted or embossed to the shape of the garage door. Emissions are from the foam burned away in the impressions and gluing to the metal door panels.

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	45 ft	2.12 ft	N/A	N/A	Up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	10,600 ACFM	50 ft/s	N/A	N/A

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	10,600	50 ft/s	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO_2)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)	1.12	1.12	PPM	4.89	4.89	2	000	N/A
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify) MDI (101-68-8)	0.71	0.71		3.10	3.10	2	000	N/A
Hazardous air pollutant (specify) Styrene (100-42-5)	0.01	0.01		0.03	0.03	2	000	N/A
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

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12. Signature		**Date**
		17 Sept. 2018
Signer's name (type or print)	**Title**	**Phone number with area code**
Cameron Rudd	President Hörmann LLC	630-518-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source 002
Summary

Source Summary	VOC		HAP (Styrene)		HAPs (MDI)		HAPs Total
	lb/hr	TPY	lb/hr	TPY	lb/hr	tpy	tpy
Emissions from EPS Panel	0.41	1.79	0.01	0.03	--	--	0.03
Emissions from Gluing EPS Foam	0.71	3.10	--	--	0.71	3.10	3.10
Total	1.12	4.89	0.01	0.03	0.71	3.10	3.13

Hormann LLC
Source 002
Imprinting Panel Shape in EPS Foam[1]
VOC Emissions from EPS Foam Loss during Imprinting Door Foam Panels.

EPS = Expanded Polystryene
Direct Data Entry

Operating Parameters

Hours of Operation	8,760	hrs/yr				
				Stack Dia.		Duct Exit Velocity
Ventilation Rate	10,600	CFM	(assumed)	2.12	ft	3000 fpm
						50 ft/s

Foam Loss Calculation:

Number of impressions	24	Impressions per average 12 ft by 7 ft Door
Production Rate[1]	80,000	Doors produced per year
Foam Loss Rate (Volume)	0.0334	Ft^3 of foam is burned away per impression
Annual Imprinting EPS Foam Loss (Volume)	64,128	Ft^3 of foam burned away per year (from imprinting)
Assumed additional Foam loss from window cutting and router	1.5%	Margin of Safety - from cutting panels with hot wire or routers for windows
Annual Total Foam Loss (volume)	65,090	Ft^3 of foam lost annually from imprinting and cutting

---

Emission Calculation:

EPS Foam Density	1.0	pcf or lb/ft^3	Nominally 1pcf per EPS Foam Tech Sheet
Tolerance for Density Variance	10%		
EPS Foam VOC Content	5%	per EPS Foam SDS from Pentanes	
EPS Foam HAP Content	0.10%	Styrene content per EPS Foam SDS	

Source Summary	VOC[2]		HAP (Styrene)	
	lb/hr	TPY	lb/hr	TPY
Emissions from EPS Panel Imprinting and Cutting	0.41	1.79	0.01	0.03

Notes and Example Calculation:

1) VOC emission calculations based on maximum garage door production of 80,000 Doors per Year

2) VOC emissions (TPY) = [EPS Foam Density (pcf) x Annual EPS Foam Loss from Imprinting and cutting (ft^3) x EPS Foam VOC Content(%)]/2,000 lb/ton

Hormann LLC
Source 002
EPS Foam Panel Gluing Emissions
VOC and HAP Emissions from Annual Usage of PURMELT Adhesive

Direct Data Entry

Operating Parameters
Hours of Operation 8,760 hrs/yr

		HAP Content			
PURMELT 513C GLUE contains		5%	Percent Methylenebis(phenylisocyanate). Also known as MDI. CAS number 101-68-8		
				Input Rate	
Current Annual Usage of EPS Foam Panel Glue (PURMELT 513C)	61,920		Lbs per year	7.07	lb/hr
Multiplier for increased production	2		Assumed that at full capacity for 1 shift at the TN plant, production/glue usage doubles.		

Source Summary	HAPs (VOC) from MDI	
	lb/hr	tpy
Emissions from Gluing EPS Foam to Door Panels	0.71	3.10

Example Calculation:

HAP Emissions from MDI (tpy) = [Annual usage of PURMELT 513C (lbs/yr) x Multiplier for increased production x HAP Content (%)] / 2,000 lb/ton

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Type or print. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Emission Source Reference Number

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

4. Unique Source ID (see instructions)
003 Polyurethane Foam Injection, Heat Tunnel, and Saw

5. Unique Emission Point ID (see instructions)
003-1 and 003-2

6. Description of air contaminant source
Polyurethane foam is injected into a cavity between two door panels resulting in a release of VOC emissions. Foam is cured in a NG fired Heat Tunnel.

7. Type of air contaminant source (Check only one option to the right)

Process Emission Source: For each process emission source, submit a separate application. (Check at right and complete lines 8, 9, and 14)	☐
Process Emission Source with in process fuel: Products of combustion contact materials heated. For each process emission source, submit a separate application. (Check at right and complete lines 8 through 14)	☑
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 10 through 14)	☐

PROCESS EMISSION SOURCE DESCRIPTION AND DATA

8. Type of operation: Continuous ☑ Batch ☐

Normal batch time	Normal batches/day

9. Process material inputs and In-process solid fuels	Diagram reference	Input rates (pounds/hour) Design	Actual
A. PENTANE	(003-1)	77.2	77.2
B. MDI	(003-1)	2,281.8	2,281.8
C. POLYOL	(003-1)	1,382.3	1,382.3
D. N/A (Sawing Operation)	(003-2)	N/A	N/A
E.			
F.			
G.			
Totals		3,741.2	3,741.2

* A simple process flow diagram must be attached.

DESCRIPTION OF BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

10. Boiler or burner data: (Complete lines 10 through 14 using a separate form for each boiler, burner, etc.)

Serial Number	Type of firing***	
	Automatic	
Rated horsepower	**Rated input capacity (10^6 BTU/Hr.)**	**Other rating (specify capacity and units)**
	0.614	180 kw
Date constructed	**Date manufactured**	**Date of last modification (explain in comments below)**
2018	2018	

** Source with a common stack will have the same stack number.

*** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments).

FUEL USED IN BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

11. Fuel data: (Complete for a process emission source with in process fuel or a non-process fuel burning source)

Primary fuel type (specify) Natural Gas — Standby fuel type(s) (specify)

Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel		(For APC use only) SCC code
		Design	Average					
Natural gas:	10^6 Cu. Ft. 5.27	Cu. Ft. 602	Cu. Ft. 602	////////// //////////	///// /////	1,000		
#2 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#5 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#6 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons	Lbs.	Lbs.	////////// //////////	///// /////			
Liquid propane:	10^3 Gal.	Gal.	Gal.	//////// ////////	///// /////	85,000		
Other (specify type & units):								

12. If Wood is used as a fuel, specify types and estimate percent by weight of bark

N/A

13. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.

N/A

14. Comments

See Process Flow Diagram

SIGNATURE

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15. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Camron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 638-518-0623

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

003 Polyurethane Foam Injection, Heat Tunnel, and Sawing Operation

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

003-1

4. Brief description of air contaminant source (Attach a diagram if appropriate):

Polyurethane foam is injected into a cavity between two door panels resulting in a release of VOC emissions. Foam is cured in a NG fired Heat Tunnel.

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	45 ft	3.00 ft	Ambient	N/A	Up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	21,189 ACFM	50 ft/sec	N/A	N/A

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	21,189	50	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	0	0	**	0.02	0.02	3	000	N/A
Sulfur dioxide (SO_2)	0	0	***	1.58 E-03	1.58 E-03	3	000	N/A
Carbon monoxide (CO)	0.05	0.05	PPM	0.22	0.22	3	000	N/A
Volatile organic compounds (VOC)	5.8	5.8	PPM	25.36	25.36	2	000	N/A
Nitrogen oxides (NO_X)	0.06	0.06	PPM	0.26	0.26	3	000	N/A
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)				318	318	3	000	N/A
Hazardous air pollutant (specify) MDI (101-68-8)				0.001	0.001	5	000	N/A
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

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12. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Cameron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-519-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source 003
Summary

Emission Point	Source Summary	PM		NOx		VOC		SO2		CO		CO2eq	HAPs (MDI)
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY	TPY
003-1	Polyurethane Foam Injection	--	--	--	--	5.79	25.35	--	--	--	--	--	0.001
	Heat Tunnel	0.00	0.02	0.06	0.26	0.00	0.01	0.00	1.58E-03	0.05	0.22	318.37	0.000
	Subtotal	0.00	0.02	0.06	0.26	5.79	25.36	0.00	1.58E-03	0.05	0.22	318.37	0.001
003-2	Sawing	0.58	2.55	--	--	--	--	--	--	--	--	--	--
	Sawing VOCs	--	--	--	--	0.12	0.51	--	--	--	--	--	--
	Subtotal	0.58	2.55	0.00	0.00	0.12	0.51	0.00	0.00E+00	0.00	0.00	0.00	0.000
	Source 003 Total	**0.59**	**2.57**	**0.06**	**0.26**	**5.91**	**25.87**	**0.00**	**1.58E-03**	**0.05**	**0.22**	**318.37**	**0.001**

Hormann LLC
Source 003
Polyurethane Foam Injection
VOC emissions from blowing agent, MDI

VOC (Pentane) Emissions

Development of Emission Factor

	Direct data entry	
Average Pentane (blowing agent) added	77.16	lb/hr
Assumed Pentane Released in Manufacturing	7.5%	Note 1
Average inlet mass to ATM	5.79	lb/hr
Emission Factor	0.075	lb VOC to ATM/lb Pentane added

VOC Emissions from Manufacturing

Maximum Annual Pentane Usage (Blowing Agent added to process) (lbs/yr)	Emission Factor	VOC Emissions (lbs/yr)	VOC Emissions (TPY)
675,930	0.075	50,695	25.35

Notes and Example Calculation:

1) Conservative Estimate based upon engineering judgement and testing results in similar industry processes.

2) VOC Emissions (TPY) = [Maximum Pentane Added(lbs/yr) x Emission Factor(lb VOC to ATM/lb Pentane added)]/2,000 lb/ton

Source 003
Polyurethane Foam Injection
VOC emissions from blowing agent, MDI

Fugitive Emissions MDI - HAPs

MDI Calculations RCAP Combined
Page 104 (App A) Vapor Pressure / Temperature chart
Page 109 (App B) Vapor Pressure Adjustment Factors (K)

Emission Calculation Development (MDI)

Average Foam Injection rate	3,741	lb/hr
MDI Introduced	2,282	lb/hr
L_c (MDI Emissions) =	0.9616	lb/yr
Margin of Compliance[1] =	15%	
L_c (MDI Emissions) =	1.1058	lb/yr

Per Production Data

	Consumption at max production kg/hr	lb/hr
Pentane	35	77.2
MDI	1,035	2281.8
Polyol	627	1382.3
Total	1,697	3,741.2

Equation for Calculating Stack Emissions of MDI from Doors
Section 10.0 page 5-25 of MDI Emissions Reporting Guidelines for the Polyurethanes Industry

Lc = Vair * (1 / 359) * (273.15 / Tproc) * (VPMDI / 760) * Mw * KMDI

Tproc =	158	˚F (or 70˚C in the polyurethane line heat tunnel)	
Tproc =	343.15	K	
VP_{MDI} =	1.36E-03	mm Hg	per App A MDI Emissions Reporting Guidelines…
Mw =	250.26	this is the molecular weight of MDI	
K_{MDI} =	0.659	adjustment factor (function of MDI Concentration in feedstock and temperature) App B MDI Emissions Reporting Guidelines…	
359	359	the molar volume of an ideal gas in ft^3/lb-mole @ 0˚C and 1-atmosphere	

Mixture = 61% MDI 61.0%

Vair (Annual Volume of Air Displaced)

Door Section Volume		
Avg. Section Height	21	inch
Avg. Section Thickness	1.75	inch
Avg. Section Width	12	ft

Volume per section	3.0625	ft^3
Average Door Number of sections	6	sections / garage door
Production rate Number of sections/yr	480,000	sections/year

Annual Volume of Air displaced = Vair =	1,470,000	ft^3

MDI Emissions Calculations

Max. MDI Usage (lbs/yr)	MDI Fugitive Emissions (lb/yr)	(tpy)
19,988,226	1.11	0.001

Notes:
(1) Based on process knowledge, variability is estimated at 10%. A conservative value of 15% is used in calculations. This value may be adjusted in the future as additional emissions data is obtained.

Hormann LLC
Source 003
Heat Tunnel For Polyurethane Foam Injection Line

Operating Parameters

Fuel Type Natural Gas

Unit Description	Maximum Firing Rate (MMBtu/hr)	
Heat Tunnel for Polyurethane Foam Injection	0.614	MMBtu/hr
Operating hours	8,760	hr/yr

Annual Fuel Usage	Natural Gas		Hourly Usage	
Heat Tunnel	5.27	MMCF/yr	602	Cu. Ft./hr

Emission Calculations

Emission Factors for Natural Gas Combustion [1,2]

	lb/10^6 scf	lb/MMBtu-HHV	
Particulate Matter (PM_{Total})	7.6	0.0075	AP-42
Particulate Matter (PM_{Cond})	5.7	0.0056	AP-42
Particulate Matter (PM_{Filter})[3]	1.9	0.0019	AP-42
Nitrogen Oxides (NO_x)	100	0.0980	AP-42
Carbon Monoxide (CO)	84	0.0820	AP-42
Sulfur Dioxide (SO_2)	0.6	0.0006	AP-42
VOC	5.5	0.0054	AP-42
Carbon Dioxide (CO_2)	120,000	117.65	AP-42
Methane (CH_4)	2.3	2.255E-03	AP-42
Nitrous Oxide (N_2O)	2.2	2.157E-03	AP-42

Natural Gas Emissions

Heat Tunnel

	lb/hr	Annual [4,5] ton/year
Particulate Matter (PM_{Total})[3]	0.00	0.02
Particulate Matter (PM_{10})[3]	0.00	0.02
Particulate Matter ($PM_{2.5}$)[3]	0.00	0.02
Nitrogen Oxides (NO_x)	0.06	0.26
Carbon Monoxide (CO)	0.05	0.22
Sulfur Dioxide (SO_2)	0.000	1.58E-03
Combustion VOC	0.00	0.01
Carbon Dioxide (CO_2)	72	316
Methane (CH_4)	0.00	0.01
Nitrous Oxide (N_2O)	1.32E-03	0.006
CO_2 Equivalent (CO_2eq)[7]	--	318

GWP[6]	
CH4	25
N2O	298

Example Calculations/Notes:

(1) Compilation of Air Pollutant Emission Factors, AP-42, Supplement D, Fifth Edition, Section 1.4, Tables 1.4-1 and 1.4-2, July 1998, Small Boilers < 100 MMBtu/hr

(2) Per AP-42, Table 1.4-1 and 1.4-2, to convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020.

(3) Assume $PM_{Total} = PM_{2.5} = PM_{10}$. (Includes filterable and condensable particulate matter)

(4) Maximum Emissions (lb/hr) = Emission Factor (lb/MMscf) * Natural Gas Usage (MMCF)

(5) Annual Emissions (tpy) = Average Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)

(6) GWP from 40 CFR 98 Subpart A Table A-1

(7) CO_2 Equivalent (CO_2eq) = CO_2 + [GWP_{CH4} * CH_4] + [GWP_{N2O} * N_2O]

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NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

003 Polyurethane Foam Injection, Heat Tunnel, and Sawing Operation

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

003-2

4. Brief description of air contaminant source (Attach a diagram if appropriate):

Sections are cut in the sawing process and a baghouse controls particulate emissions.

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	45 ft	1.0 ft	N/A	N/A	Up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	3,531 ACFM	75 ft/sec	N/A	2%

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	3,397 DSCFM	72 ft/sec	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

Baghouse pressure drop.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	0.58	0.58	**	2.55	2.55	2	018	99%
Sulfur dioxide (SO_2)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)	0.12	0.12	PPM	0.51	0.51	2	018	N/A
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

SIGNATURE

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12. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Camron Rudd	**Title** President Hörmann LLC	**Phone number with area code** 636-519-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source 003
Polyurethane Foam Injection Line Sawing Operation: VOC released to Dust Collector

Operating Parameters		
Hours of Operation	8,760	hrs/yr

Maximum Potential to Emit - VOC

Maximum Annual Pentane Usage (lbs/yr)	VOC Loss at Manufacturing (lbs/yr)	VOC Available at Sawing[1] (lbs/yr)	Section Foam Trimmed[2,3] (%)	VOC Emissions[4,5] (lbs/yr)	VOC Emissions[4,5] (tpy)	
675,930	50,695	625,236	0.16%	1,026	0.51	lb/hr
						0.12

Notes:
(1) VOC Available at Sawing (lbs) = Max Blowing Agent VOC (lbs) - VOC Loss at Manufacturing (lbs)
(2) The maximum cut volume is determined first by calculating the trim from each side of the garage door section. As indicated, automated saws trim the edges of the doors, trimming approximately 3mm from each side. Average Garage door section width is 12 ft, average section height is 21 inch, and the average section thickness is 1.75 inch. All saw cut emissions are collected and routed to the baghouse dust collector. The table below contains a detailed calculation of the % volume cut during sawing.
(3) Assume that the mass of trimmed door section is proportional to volume (0.16%).
(4) VOC Emissions (lbs) = VOC Available at Sawing (lbs) * Section Foam Trimmed (%) / 100
(5) VOC Emissions (tons) = VOC Emissions (lbs) / 2000

Door Section Volume		
Avg. Section Height	21	inch
Avg. Section Thickness	1.75	inch
Avg. Section Width	12	ft
Volume of Untrimmed Section	3.06	ft^3
Volume of Section Trimmed		
Saw Kerf	3	mm
Volume Trimmed/cut	0.0025	ft^3
Number of cuts per section	2	cuts
Percentage of Total Volume	**0.16%**	

Hormann LLC
Source 003
Sawing Dust Collector Emissions

Operating Hours 8,760 hr/yr

Baghouse I.D.	Flow Rate (ACFM)	Exhaust Diameter (ft)	Exhaust Cross-Sectional Area (ft^2)	Exit Velocity (ft/sec)	Exit Velocity (ft/min)	Exit Temp (F)	Moisture Content %	Flow Rate[1] (DSCFM)	Exhaust PM Conc. (gr/dscf)	PM	
										lb/hr^2	tpy^3
Sawing DC	3,531	1.22	1.18	50.0	3000.0	80	2.0%	3,397	0.02	0.58	2.55

Example Calculations and Notes:
(1) Flow Rate (DSCFM) = (ACFM x ((460+70)/(460 + Exit Temp))) x (1 - Moisture Content)
(2) PM Emissions (lb/hr) = DSCFM x Exhaust PM Conc. x 60 (min/hr) x (1 lb / 7000 grains)
(3) PM Emissions (tpy) = (PM Emissions (lb/hr) x 8760 (hr/yr)) / (2000 (lb/ton))

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Type or print. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Emission Source Reference Number

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

4. Unique Source ID (see instructions)
004 Custom Paint Application

5. Unique Emission Point ID (see instructions)
004-1, 2, & 3

6. Description of air contaminant source
A small custom painting operation with spray booth and NG fired replacement air (flash tunnel) and NG fired cure oven. - Insignificant Activity

7. Type of air contaminant source (Check only one option to the right)

Process Emission Source: For each process emission source, submit a separate application. (Check at right and complete lines 8, 9, and 14)	☐
Process Emission Source with in process fuel: Products of combustion contact materials heated. For each process emission source, submit a separate application. (Check at right and complete lines 8 through 14)	☑
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 10 through 14)	☐

PROCESS EMISSION SOURCE DESCRIPTION AND DATA

8. Type of operation: Continuous ☑ Batch ☐

Normal batch time	Normal batches/day

9. Process material inputs and In-process solid fuels	Diagram reference	Input rates (pounds/hour) Design	Actual
A. CARBITHANE 11 SERIES	(004-1)	14.6	14.6
B.			
C.			
D.			
E.			
F.			
G.			
Totals		14.6	14.6

* A simple process flow diagram must be attached.

DESCRIPTION OF BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

10. Boiler or burner data: (Complete lines 10 through 14 using a separate form for each boiler, burner, etc.)

Serial Number	Type of firing***
	Automatic

Rated horsepower	Rated input capacity (10^6 BTU/Hr.)	Other rating (specify capacity and units)
	2.5 Oven + 3.0 Make up air = 5.5	

Date constructed	Date manufactured	Date of last modification (explain in comments below)
2018	2018	

** Source with a common stack will have the same stack number.

*** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments).

FUEL USED IN BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

11. Fuel data: (Complete for a process emission source with in process fuel or a non-process fuel burning source)

Primary fuel type (specify) Natural Gas — Standby fuel type(s) (specify)

Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel		(For APC use only) SCC code
		Design	Average					
Natural gas:	10^6 Cu. Ft. 47.23	Cu. Ft. 5,392	Cu. Ft. 5,392	////////// //////////	///// /////	1,000		
#2 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#5 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#6 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons	Lbs.	Lbs.	////////// //////////	///// /////			
Liquid propane:	10^3 Gal.	Gal.	Gal.	//////// ////////	///// /////	85,000		
Other (specify type & units):								

12. If Wood is used as a fuel, specify types and estimate percent by weight of bark

N/A

13. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.

N/A

14. Comments

See Process Flow Diagram

SIGNATURE

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Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

15. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Camran Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-518-0623

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
SURFACE COATING DESCRIPTION

Type or print. Submit for each spray booth, dip tank, or other surface coating equipment. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. **Organization's legal name and SOS control number** [as registered with the Tennessee Secretary of State (SOS)]	2. **Emission Source Reference Number**
Hormann LLC 000932606	

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

COATING OPERATION DATA

4. Unique Source ID (name/number/letter that uniquely identifies this air contaminant source, like Paint Line 1)
004-1 Custom Paint Application - two identical booths

5. Type of coating operation	Spray booth	Dip tank	Other (describe)
	☑	☐	

6. Spray booth dimensions	Width (ft.)	Height (ft.)	Depth (ft.)	Number of open sides
	10	10	20	

7. Method of spray:	Airless	Air atomized	Electrostatic			Overspray (Percent)	Date purchased *
			Airless	Disc	Air atomized		
	☐	☑	☐	☐	☐	20-30	2018

8. Exhaust data:	Number of fans	Total horsepower	Total volume (CFM)
	1	5	12,600

9. Exhaust control:	None	Waterwash	Exhaust filters	Baffle plates	Adsorption **	Other (Describe)
	☐	☐	☑	☐	☐	

10. Exhaust stack data ****	Diameter (Ft.)	Height (Ft.) Above Grade	Flow (CFM)	Specify serial numbers that share this vent
	2.5	45		

11. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

Records will be maintained on exhaust filter replacement.

* The actual surface coating equipment (spray gun, spray heads, etc.) and not the spray booth per se determines the status of the source (new or existing).

** Complete one line for each stack or vent. Attach additional sheets if necessary

NOTE: This application will not be processed unless all of the following information is provided.

MATERIAL DATA

12. Coatings, Thinners, and Clean-up Solvents used:

List all types of coatings, thinners, and clean-up solvents used and attach a statement of the chemical composition of each (i.e. Safety Data Sheet). This statement usually may be obtained from the coating, thinner, or clean-up solvent supplier. The minimum information required is the percent of solids by weight, the percent volatile by weight, the hydrocarbon composition and/or description of the volatile component, and the density of the coating, thinner, or clean-up solvent in pounds per gallon.

Coating name	Base [Water, Powder or Solvent*]	%Solids by Weight	%Volatile by Weight	Density (Lbs. /Gal.)	Quantity used		
					Gallons/Day		Gal./Mo.
					Average	Maximum **	Average
Carbithane 11 Series		58%	24.8%	11.7	25	25	250
			(2.9 lb/gal)				
Thinner name							
Clean – up solvent name							

* Name Solvent Base type

** For new construction, this quantity will be used as a permit limitation on capacity.

13. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Tons/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	2.54	2.54		3.05	3.05	2	000	N/A
Sulfur dioxide (SO_2)								
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)	3.63	3.63	PPM	4.35	4.35	2	000	N/A
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify) MDI				0.001	0.001	2	000	NA
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								

* Refer to the tables in the instructions for estimation method and control device codes.

EQUIPMENT DESCRIPTION		
14. Equipment manufacturer	Model number	Serial number (or plant ID)
Construction date		Modification date
Describe any modifications*		

15. Describe articles coated

16. Comments

Insignificant activity

SIGNATURE

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Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Cameron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-518-0623

Hormann LLC
Source 004
Summary

Emission Point	Source Summary	PM		NOx		VOC		SO2		CO		CO2eq	HAPs (MDI)
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY	TPY
004-1	Custom Paint Application	2.54	3.05	--	--	3.63	4.35	--	--	--	--	--	0.001
004-2	Replacement Air	0.02	0.10	0.29	1.29	0.02	0.07	0.00	0.01	0.25	1.08	1555.07	--
004-3	Custom Paint Cure Oven	0.02	0.08	0.25	1.07	0.01	0.06	0.00	0.01	0.21	0.90	1295.89	--
	Subtotal	2.59	3.23	0.54	2.36	3.65	4.48	0.00	0.014	0.45	1.98	2850.96	0.001

Hormann LLC
Source 004
Custom Paint Application
VOC Emissions from Annual Usage of Custom Paint

Operating Parameters
Hours of Operation 8,760 hrs/yr

Potential Overspray	30%	
Material Density	11.7	lb/Gal
Solid Content	58%	by weight
Carbithane 11 Series Low VOC Coatings	2.9	lb VOC/gal per Product Data Sheet
Custom Paint Application Annual Usage	3,000	Gallons per year
Anticipated Actual Operation	2,400	hours/yr

Source Summary	PM		VOC	
	lb/hr[2]	TPY[1]	lb/hr[2]	TPY[1]
Emissions from Custom Paint Application	2.54	3.05	3.63	4.35

Example Calculation:
1. PM emissions (tpy) = Coating Annual Usage (gal/yr) x Material Density (lb/gal) x Solids Content (%) x Potential Overspray (%) / 2000 lb/ton
2. VOC emissions (tpy) = Coating VOC Content (lb/gal) x Coating Annual Usage (gal/yr) / 2,000 lb/ton

3. The Lb/hr emission rate is estimated based upon this source operating at just 2,400 hrs/year due to the anticipated actual operation. Though Hormann LLC does not wish to limit the operating hours for the source.

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NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

004 Custom Paint Application

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

004-2

4. Brief description of air contaminant source (Attach a diagram if appropriate):

NG fired replacement air (flash tunnel) for custom paint application. - Insignificant Activity

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	45	1.0	150	100	up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	1,300	28	N/A	N/A
Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	1250	27	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	0.02	0.02	**	0.10	0.10	3	000	N/A
Sulfur dioxide (SO_2)	0.00	0.00	***	0.01	0.01	3	000	N/A
Carbon monoxide (CO)	0.25	0.25	PPM	1.08	1.08	3	000	N/A
Volatile organic compounds (VOC)	0.02	0.02	PPM	0.07	0.07	3	000	N/A
Nitrogen oxides (NO_X)	0.29	0.29	PPM	1.29	1.29	3	000	N/A
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)				1,555	1,555	3	000	N/A
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

SIGNATURE

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12. Signature		**Date**
		17 Sept. 2018
Signer's name (type or print)	**Title**	**Phone number with area code**
Camran Rudd	President, Hörmann LLC	630-518-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source004
Insignificant Emissions Unit: Replacement (Make-up) Air Unit (Flash Tunnel)
004-2

Operating Parameters

Fuel Type Natural Gas

Unit Description	Maximum Firing Rate (MMBtu/hr)	
Replacement Make-up Air Unit	3.00	MMBtu/hr
Operating hours	8,760	hr/yr

Annual Fuel Usage	Natural Gas		Hourly Usage	
Replacement Make-up Air Unit	25.76	MMCF/yr	2,941	Cu. Ft./hr

Emission Calculations

Emission Factors for Natural Gas Combustion [1,2]

	lb/10^6 scf	lb/MMBtu-HHV	
Particulate Matter (PM_{Total})	7.6	0.0075	AP-42
Particulate Matter (PM_{Cond})	5.7	0.0056	AP-42
Particulate Matter (PM_{Filter})[3]	1.9	0.0019	AP-42
Nitrogen Oxides (NO_x)	100	0.0980	AP-42
Carbon Monoxide (CO)	84	0.0820	AP-42
Sulfur Dioxide (SO_2)	0.6	0.0006	AP-42
VOC	5.5	0.0054	AP-42
Carbon Dioxide (CO_2)	120,000	117.65	AP-42
Methane (CH_4)	2.3	2.255E-03	AP-42
Nitrous Oxide (N_2O)	2.2	2.157E-03	AP-42

Natural Gas Emissions

Replacement Air Make-up Unit

	lb/hr	Annual [4,5] ton/year
Particulate Matter (PM_{Total})[3]	0.02	0.10
Particulate Matter (PM_{10})[3]	0.02	0.10
Particulate Matter ($PM_{2.5}$)[3]	0.02	0.10
Nitrogen Oxides (NO_x)	0.29	1.29
Carbon Monoxide (CO)	0.25	1.08
Sulfur Dioxide (SO_2)	0.002	0.01
Combustion VOC	0.02	0.07
Carbon Dioxide (CO_2)	353	1,546
Methane (CH_4)	0.01	0.03
Nitrous Oxide (N_2O)	6.47E-03	0.028
CO_2 Equivalent (CO_2eq)[7]	--	1,555

GWP[6]	
CH4	25
N2O	298

Example Calculations/Notes:

(1) Compilation of Air Pollutant Emission Factors, AP-42, Supplement D, Fifth Edition, Section 1.4, Tables 1.4-1 and 1.4-2, July 1998, Small Boilers < 100 MMBtu/hr

(2) Per AP-42, Table 1.4-1 and 1.4-2, to convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020.

(3) Assume PM_{Total} = $PM_{2.5}$ = PM_{10}. (Includes filterable and condensable particulate matter)

(4) Maximum Emissions (lb/hr) = Emission Factor (lb/MMscf) * Natural Gas Usage (MMCF)

(5) Annual Emissions (tpy) = Average Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)

(6) GWP from 40 CFR 98 Subpart A Table A-1

(7) CO_2 Equivalent (CO_2eq) = CO_2 + [GWP_{CH4} * CH_4] + [GWP_{N2O} * N_2O]

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NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)
004 Custom Paint Application

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)
004-3

4. Brief description of air contaminant source (Attach a diagram if appropriate):
NG fired cure oven for custom paint application. - Insignificant Activity

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	45	1.5	150	100	up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	3,400	32	N/A	2.0

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	3,270	31	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).
None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	0.02	0.02	**	0.08	0.08	3	000	N/A
Sulfur dioxide (SO_2)	0.00	0.00	***	0.01	0.01	3	000	N/A
Carbon monoxide (CO)	0.21	0.21	PPM	0.90	0.90	3	000	N/A
Volatile organic compounds (VOC)	0.01	0.01	PPM	0.06	0.06	3	000	N/A
Nitrogen oxides (NO_X)	0.25	0.25	PPM	1.07	1.07	3	000	N/A
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)				1,296	1,296	3	000	N/A
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

SIGNATURE		
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Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.		
12. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Cameron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-518-9623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Source 004
Custom Paint Cure Oven
004-3

Operating Parameters

Fuel Type Natural Gas

Unit Description	Maximum Firing Rate (MMBtu/hr)	
Custom Paint Cure Oven Burner	2.50	MMBtu/hr
Operating hours	8,760	hr/yr

Annual Fuel Usage	Natural Gas		Hourly Usage	
Custom Paint Cure Oven Burner	21.47	MMCF/yr	2,451	Cu. Ft./hr

Emission Calculations

Emission Factors for Natural Gas Combustion [1,2]

	lb/10^6 scf	lb/MMBtu-HHV	
Particulate Matter (PM_{Total})	7.6	0.0075	AP-42
Particulate Matter (PM_{Cond})	5.7	0.0056	AP-42
Particulate Matter (PM_{Filter})[3]	1.9	0.0019	AP-42
Nitrogen Oxides (NO_x)	100	0.0980	AP-42
Carbon Monoxide (CO)	84	0.0820	AP-42
Sulfur Dioxide (SO_2)	0.6	0.0006	AP-42
VOC	5.5	0.0054	AP-42
Carbon Dioxide (CO_2)	120,000	117.65	AP-42
Methane (CH_4)	2.3	2.255E-03	AP-42
Nitrous Oxide (N_2O)	2.2	2.157E-03	AP-42

Natural Gas Emissions

Custom Paint Cure Oven

	lb/hr	Annual [4,5] ton/year
Particulate Matter (PM_{Total})[3]	0.02	0.08
Particulate Matter (PM_{10})[3]	0.02	0.08
Particulate Matter ($PM_{2.5}$)[3]	0.02	0.08
Nitrogen Oxides (NO_x)	0.25	1.07
Carbon Monoxide (CO)	0.21	0.90
Sulfur Dioxide (SO_2)	0.001	0.01
Combustion VOC	0.01	0.06
Carbon Dioxide (CO_2)	294	1,288
Methane (CH_4)	0.01	0.02
Nitrous Oxide (N_2O)	5.39E-03	0.024
CO_2 Equivalent (CO_2eq)[7]	--	1,296

GWP[6]	
CH4	25
N2O	298

Example Calculations/Notes:

(1) Compilation of Air Pollutant Emission Factors, AP-42, Supplement D, Fifth Edition, Section 1.4, Tables 1.4-1 and 1.4-2, July 1998, Small Boilers < 100 MMBtu/hr

(2) Per AP-42, Table 1.4-1 and 1.4-2, to convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020.

(3) Assume PM_{Total} = $PM_{2.5}$ = PM_{10}. (Includes filterable and condensable particulate matter)

(4) Maximum Emissions (lb/hr) = Emission Factor (lb/MMscf) * Natural Gas Usage (MMCF)

(5) Annual Emissions (tpy) = Average Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)

(6) GWP from 40 CFR 98 Subpart A Table A-1

(7) CO_2 Equivalent (CO_2eq) = CO_2 + [GWP_{CH4} * CH_4] + [GWP_{N2O} * N_2O]

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
STORAGE TANK DESCRIPTION

Type or print. Submit for each storage tank. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Hormann LLC 000932606

2. Emission Source Reference Number

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☐ No ☑
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

TANK DESCRIPTION AND DATA

4. Tank identification number
Pentane (Blowing Agent) Tank

Construction date
2018

5. Tank diameter (Ft.)	Height (Ft.)	Capacity (gallons)	Capacity (barrels)
		12,000	

6. Shape	Cylinder (up)	Cylinder (horizontal)	Sphere	Other (describe)
	☐	☑	☐	

7. Tank color:	White	Aluminum		Gray			Other (describe)
		Specular	Diffuse	Light	Medium	Dark	
A. Roof:	☑	☐	☐	☐	☐	☐	
B. Shell	☑	☐	☐	☐	☐	☐	

8. Paint condition: Good ☑ Poor ☐

9. Tank Check	Fixed roof	Floating roof	Open top	Underground	Other (describe)
	☐	☐	☐	☐	

10. Insulated and/or heated to: (°F)

Pressurized to: (PSIA)

11. Loading type: Type ___ ___ ___ ___ ___	Bottom	Submerged	Vapor balanced	Other (describe)
	☐	☐	☐	

12. List all liquids, vapors, gases, or mixtures to be stored in this tank. Give the percent by weight of each component.
Pentane (100%) with a nitrogen blanket

13. **Outage:** Average distance in feet from top of tank to liquid surface.	Average throughput (gallons/day)	Maximum number of tank turnovers per year

14. **Complete the following only if the tank is equipped with a floating roof:**				
A. Roof type:	Double deck ☐	Pontoon ☐	Pan ☐	Other (describe)
B. Seal type:	Single ☐	Double ☐		Other (describe)
C. Shell construction:	Riveted ☐	Welded ☐		Other (describe)

15. Comments

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

16. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Carson Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 630-518-0623

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]

Hormann LLC 000932606

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)

005 Blowing Agent Tank Recirculation Loop

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)

005

4. Brief description of air contaminant source (Attach a diagram if appropriate):

12,000 gallon Pentane (Blowing Agent) Tank Recirculation Loop Component Leaks - Fugitive Emissions - Insignificant Activity

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	36.05565 N	85.52171 W	

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	N/A	N/A	N/A	N/A	N/A

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	N/A	N/A	N/A	N/A

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture (Grains/$Ft.^3$)	Moisture (Percent)
	N/A	N/A	N/A	N/A

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).

None.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO_2)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)	0.13	0.13	PPM	0.58	0.58	5	000	N/A
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

SIGNATURE

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12. Signature		**Date** 17 Sept. 2018
Signer's name (type or print) Cameron Rudd	**Title** President, Hörmann LLC	**Phone number with area code** 638-519-0623

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Hormann LLC
Blowing Agent Component Fugitive Emissions
Source 005
The tank has a nitrogen blanket. Therefore, no emissions are calculated from the tank itself.

Operating Parameters
Hours of Operation 8,760 hrs/yr

The blowing agent tank has a recirculating pump and loop that runs continually. The process draws blowing agent off this loop as required for production. The loop fittings are included.
Fugitive blowing agent emissions from leaks in the transfer lines and the process piping were calculated using US EPAs publication
"Fugitive VOC Emissions in the Synthetic Organic Chemical Manufacturing Industry (SOCMI)", December 1984 (EPA-625/10-84-004) Emission Factors
The factors presented in the original publication were revised based on June 1994 guidance from the Texas Natural Resource Conservation Commission (TNRCC).
The most conservative factors (i.e. light liquids) were used to represent blowing agent. The emission factors are as follows:

Valves	0.0035	lb/hr/component			
Pump Seals	0.0386	lb/hr/component			
Flanges	0.0005	lb/hr/component			
Relief Valves**	0.22963	lb/hr/component	**	0	lb/hr/component

Hormann expects that the blowing agent transfer and process system will consist of a maximum of 2 pumps, 27 flanged connections, 12 valves, and 2 relief valves.
**Because each tank will operate under pressure, there are assumed to be no emissions from pressure relief valves.
Therefore, the minimum expected emissions from blowing agent transfer lines and process piping are:

Components	# of Components	% VOC in Blowing Agent	Emission Factor (lb/hr/component)	VOC Emissions[1,2] (lb/hr)	(lb/yr)	(tpy)
Valves	12	100%	0.0035	0.04	368	0.18
Pump Seals	2		0.0386	0.08	676	0.34
Flanges	27		0.0005	0.01	118.3	0.06
Relief Valves	5		0	0.00	0.0	0.00
			Total =	**0.13**	**1,162**	**0.58**

Notes:
(1) VOC Emissions (lbs) = # of Components * % VOC in Blowing Agent (%) * Emission Factor (lb/hr/component) / 100
(2) VOC Emissions (tpy) = VOC Emissions (lb/yr) / 2000 (lb/ton)