TECHNICAL SUPPORT DOCUMENT

For

DRAFT/PROPOSED AIR EMISSION PERMIT NO. 13500002-005

This technical support document (TSD) is intended for all parties interested in the draft/proposed permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft/proposed permit.

1. General Information

1.1 Applicant and Stationary Source Location:

Table 1. Applicant and Source Address

Applicant/Address	**Stationary Source/Address** (SIC Code: 2431)
Marvin Lumber and Cedar Company P.O. Box 100 401 States Avenue Warroad, MN 56763	Marvin Windows and Doors 401 States Avenue Warroad Roseau County
Contact: Bradley Baumann Phone: 218-386-1430	

1.2 Facility Description

Marvin Lumber and Cedar Company (the Permittee) owns and operates Marvin Windows and Doors (the Facility). The Facility manufactures wood windows and doors for residential and commercial application.

1.3 Description of any Changes Allowed with this Permit Issuance

In addition to reissuance of the Title V permit, this permit action includes a major amendment application received July 26, 2012, and a minor amendment application received September 16, 2011. The minor amendment application does not request any physical changes to the facility, but is a request to add to the permit existing emission units previously classified as insignificant activities under Minn. R. 7007.1300, subp. 3(A). Those units are now emission units, documented in the permit at GP025.

The major amendment application requests installation of a new lineal auto coating line (three coating booths and two electric ovens) and a hand spray booth. The requested changes is authorized in the permit, and is subject to limits on VOC and particulate matter emissions such that the change is not a major modification under New Source Review. The coating booths are EU488, EU489, EU481, and EU483, and are listed in the permit under those designations; all VOC emissions are assumed to occur at the booths (i.e., none of the VOC emissions are attributed to the electric ovens). The two electric ovens, EU490 and EU482, are not expected to generate emissions, and were added to the permit under the existing GP013.

Level	Applicable Regulations	Comments:
Spray Booth		usage, set in previous permit actions.
	Minn. R. 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment. Unit was constructed after July 9, 1969.
EU012 Wood-fired boiler	Minn. R. 7011.0515	Standards of Performance for New Indirect Heating Equipment. This unit was constructed after January 31, 1977.
	40 CFR pt. 63, Subpart JJJJJJ	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources
EU013 Gas-fired boiler	Minn. R. 7011.0515	Standards of Performance for New Indirect Heating Equipment. This unit was constructed after January 31, 1977.
EU023 Diesel Generator	40 CFR § 52.21	Prevention of Significant Deterioration. BACT limits set for annual hours of operation in previous permit actions.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines
	40 CFR pt. 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This engine is a non-emergency engines <500 hp.
EU031 Diesel Generator	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines
	40 CFR pt. 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This engine is an emergency engine.
EU040 Wood Bead Primer	40 CFR § 52.21	Prevention of Significant Deterioration. BACT limits on annual VOC usage and requiring water-based coatings, set in previous permit actions.
EU045 Prime Line 2	40 CFR § 52.21	Prevention of Significant Deterioration. BACT limit set for PM_{10} in previous permit actions.
	Minn. R. 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment. Unit was constructed after July 9, 1969.
EU047 Fan Coater	Minn. R. 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment. Unit was constructed after July 9, 1969.
EU049 Hand Spray Line	40 CFR § 52.21	Prevention of Significant Deterioration. BACT limit set for PM_{10} in previous permit actions.
	Minn. R. 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment. Unit was constructed after July 9, 1969.
EU321 Prime Line 3	Minn. R. 7011.0715	Standards of Performance for Post 1969 Industrial Process Equipment. Unit was constructed after July 9, 1969.
EU382	40 CFR § 52.21	Prevention of Significant Deterioration. BACT limits set for PM

Level*	Requirement (basis)	Additional Monitoring	Discussion
GP003 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM_{10}	Fabric Filter baghouse (CE003) is subject to CAM; see GP022. Current test frequency is every 60 months.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 76500 acfm (PSD modeling analysis)	Ongoing records of design specifications Annual performance testing	
GP004 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM_{10}	Fabric Filter baghouse (CE005) is subject to CAM; see GP022. Have tested, but no test frequency was ever required. To eliminate excessive testing in a given year, next test is due 9/30/2017.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 46000 acfm (PSD modeling analysis)	Ongoing records of design specifications Annual performance testing	
GP005 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM_{10}	Fabric Filter baghouse (CE009) is subject to CAM; see GP022. Current test frequency is every 60 months.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 115300 acfm (PSD modeling analysis)	Ongoing records of design specifications Annual performance testing	
GP006 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Initial Performance test for PM/PM_{10}	Fabric Filter baghouse (CE019) is subject to CAM; see GP022. Test frequency plan following initial performance test will determine future testing requirements.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 57600 acfm	Ongoing records of design	

Level*	Requirement (basis)	Additional Monitoring	Discussion
	(Title I limit to avoid PSD)	specifications Annual performance testing	
GP009 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM_{10}	Fabric Filter baghouse (CE020) is subject to CAM; see GP022. Current test frequency is every 60 months.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 140849 acfm (Title I limit to avoid PSD)	Ongoing records of design specifications Annual performance testing	
GP011 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Initial Performance test for PM/PM_{10}	Fabric Filter baghouse (CE021) is subject to CAM; see GP022. Test frequency plan following initial performance test will determine future testing requirements.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 140849 acfm (Title I limit to avoid PSD)	Ongoing records of design specifications Annual performance testing	
GP012 (Wood-fired boilers)	PM: ≤ 0.1 lb/MMBtu PM_{10}: ≤ 0.1 lb/MMBtu (BACT)	Proper ESP O&M Periodic performance testing for PM/PM_{10}	Current test frequency is every 60 months.
	PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20% with exceptions (Minn. R. 7011.515)		
	Boiler tune-up and energy assessment requirements (NESHAP subp. JJJJJJ)	None beyond NESHAP rule requirements	
GP013 (ovens/air-make up units)	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)	None	Most of these are electric ovens, and any emissions will be limited to VOC from the drying process. One unit is a natural gas –fired air

Level*	Requirement (basis)	Additional Monitoring	Discussion
			make up unit. PM emissions from natural gas combustion will be well below the limit.
GP014 (diesel engines)	SO_2: ≤ 0.5 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.2300)	None	Calculated potential emissions based on allowed fuel and equipment capacity is approximately 0.2 lb/MMBtu
	Hours of operation: ≤ 600 hours per year (BACT)	Recordkeeping	
	CO: ≤ 23 ppmv or ≥ 70% reduction Engine operating requirements (NESHAP subp. ZZZZ)	None beyond NESHAP rule requirements	Engines are existing CI engines ≥ 500 hp located at an area source.
GP015 (diesel engines)	SO_2: ≤ 0.5 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.2300)	None	Calculated potential emissions based on allowed fuel and equipment capacity is approximately 0.2 lb/MMBtu
	Hours of operation: ≤ 600 hours per year (Title I limit to avoid PSD)	Recordkeeping	
	CO: ≤ 23 ppmv or ≥ 70% reduction Engine operating requirements (NESHAP subp. ZZZZ)	None beyond NESHAP rule requirements	Engines are existing CI engines ≥ 500 hp located at an area source.
GP016 (diesel engines)	SO_2: ≤ 0.5 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.2300)	None	Calculated potential emissions based on allowed fuel and equipment capacity is approximately 0.2 lb/MMBtu
	Hours of operation: ≤ 600 hours per year (Used to calculate PTE)	Recordkeeping	
	CO: ≤ 23 ppmv or ≥ 70% reduction Engine operating requirements (NESHAP subp. ZZZZ)	None beyond NESHAP rule requirements	Engines are existing CI engines ≥ 500 hp located at an area source.

Level*	Requirement (basis)	Additional Monitoring	Discussion
GP017 (wood treatment)	VOC: ≤ 182 tons/year of mixture usage (Title I limit to avoid PSD)	Proper O&M of activated carbon adsorption system Daily recordkeeping and calculations	Activated carbon adsorption system (CE011) is subject to CAM.
GP019 (wood treatment)	VOC: ≤ 19.6 lb/hr VOC: ≤ 687 tons/year of mixture usage Work practice requirements (BACT)		
GP021 (Wood milling equipment)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM10	Fabric Filter baghouse (CE060) is subject to CAM; see GP022. Current test frequency is every 60 months.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
	Air flow: ≤ 72440 acfm (BACT)	Ongoing records of design specifications Annual performance testing	
GP022 (Fabric filters subject to BACT and CAM)	PM: ≥ 99% control efficiency PM_{10}: ≥ 99% control efficiency $PM_{2.5}$: > 99% control efficiency Pressure drop: 0.05 – 10 inches water column (BACT)	Proper O&M Operation according to most recent performance test Read and record pressure drop once each 24 hours Periodic inspections	CAM
GP023 (wall/panel filters subject to BACT)	PM_{10}: ≥ 95% control efficiency (BACT)	Proper O&M Daily & periodic inspections	
	PM: ≥ 95% control efficiency (used to calculate PTE)		
GP024 (Wood milling	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf (BACT)	Proper baghouse O&M Periodic Performance testing for PM/PM_{10}	Fabric Filter baghouse (CE064) is subject to CAM; see GP022. Current test frequency is every 60

Level*	Requirement (basis)	Additional Monitoring	Discussion
equipment)	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		months.
	Air flow: ≤ 83040 acfm (BACT)	Ongoing records of design specifications Annual performance testing	
GP025 (miscellaneous indirect heating units)	PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20% with exceptions (Minn. R. 7011.0515)	None	All are natural gas fired units. Potential emission based on fuel and capacity are 0.0006 lb/MMBtu (each).
GP026 (wall/panel filters subject to CAM)	PM: ≥ 92% control efficiency PM_{10}: ≥ 92% control efficiency $PM_{2.5}$: ≥ 92% control efficiency Pressure drop: 0.1 – 8.0 inches water column (Title I limit to avoid PSD)	Proper O&M Operation according to most recent performance test Read and record pressure drop once each 24 hours Periodic inspections	CAM
GP027 (wall/panel filters not subject to CAM)	PM: ≥ 92% control efficiency PM_{10}: ≥ 92% control efficiency $PM_{2.5}$: ≥ 92% control efficiency Pressure drop: 0.1 – 8.0 inches water column (Title I limit to avoid PSD)	Proper O&M Operation according to most recent performance test Read and record pressure drop once each operating Periodic inspections	
GP028 (storage tanks)	Submerged fill pipe (Minn. R. 7011.1505)	None	
GP029 (wood storage piles)	Minimize airborne particulate matter (Minn. R. 7011.0150)	None	
EU010	VOC: ≤ 30 tons per year, on a 365-day rolling sum	Daily records of coating usage	BACT limits are carried forward from previous permits.

Level*	Requirement (basis)	Additional Monitoring	Discussion
(fire pump emergency engine)	Opacity: ≤ 20% (Minn. R. 7011.2300)		equipment capacity is approximately 0.2 lb/MMBtu
	Hours of operation: < 600 hours per year (Used to calculate PTE)	Recordkeeping	
	Work practice requirements (NESHAP Subp. ZZZZ)	None beyond NESHAP rule requirements	Engine is an existing emergency CI engine at an area source..
EU040 (wood bead primer)	VOC: < 38 tons/year VOC containing mixtures Work practice requirements (BACT)	Daily recordkeeping	
EU045 (P2 prime line #2)	PM_{10}: ≤ 1.91 tons/year (BACT)	Proper Panel filter O&M Daily recordkeeping Monthly calculations	See GP023 for filter requirements.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
EU047 (fan coater)	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)	None	Operation is not expected to generate particulate matter emissions.
EU049 (overhead hand spray line)	PM_{10}: ≤ 1.91 tons/year (BACT)	Proper Panel filter O&M Daily recordkeeping Monthly calculations	See GP023 for filter requirements.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
EU321 (P2 prime line #3)	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)	Proper Panel Filter O&M	See GP027 for filter requirements.
EU382 (internally vented systems)	PM: ≤ 0.002 gr/dscf PM_{10}: ≤ 0.002 gr/dscf Air flow: ≤ 250000 acfm (BACT)	Proper filter O&M Recordkeeping of airflow design parameters	Since equipment exhausts inside the building, testing is not feasible
	PM: variable with load		

Level*	Requirement (basis)	Additional Monitoring	Discussion
	Opacity: ≤ 20% (Minn. R. 7011.0715)		
EU385 (wood treatment pilot plant prototype)	VOC: ≤ 36 tons/year (Title I limit to avoid PSD)	Daily recordkeeping	
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)	None	Equipment is not expected to generate particulate matter emissions
EU446 (IF line #1)	VOC: ≤ 22.0 tons/year PM: ≤ 2.1 tons/year PM_{10}: ≤ 2.1 tons/year $PM_{2.5}$: ≤ 2.1 tons/year (Title l limits to avoid PSD)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	Panel filters (CE065 & CE066) are subject to CAM; see GP026.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
EU448 (IF hand spray booth #1)	VOC: ≤ 5.5 tons/year PM: ≤ 2.2 tons/year PM_{10}: ≤ 2.2 tons/year $PM_{2.5}$: ≤ 2.2 tons/year (Title l limits to avoid PSD)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	Panel filters (CE067 & CE068) are subject to CAM; see GP026.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		
EU449 (IF hand spray booth #2)	VOC: ≤ 5.5 tons/year PM: ≤ 2.2 tons/year PM_{10}: ≤ 2.2 tons/year $PM_{2.5}$: ≤ 2.2 tons/year (Title l limits to avoid PSD)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	Panel filters (CE069 & CE070) are subject to CAM; see GP026.
	PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)		

Level*	Requirement (basis)	Additional Monitoring	Discussion
EU488 (CSI auto line #1, booth #1)	VOC: ≤ 6.0 tons/year PM: ≤ 0.25 tons/year PM_{10}: ≤ 0.25 tons/year $PM_{2.5}$: ≤ 0.25 tons/year (Title I limits to avoid PSD) PM: variable with load Opacity: ≤ 20% (Minn. R. 7011.0715)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	See GP027 for panel filter requirements.
EU489 (CSI auto line #1, booth #2)	VOC: ≤ 8.0 tons/year PM: ≤ 1.0 tons/year PM_{10}: ≤ 1.0 tons/year $PM_{2.5}$: ≤ 1.0 tons/year (Title I limits to avoid PSD) PM: variable with load Opacity: < 20% (Minn. R. 7011.0715)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	Panel filters (CE073 & CE074) are subject to CAM; see GP026.
EU491 (CSI auto line #1, booth #3)	VOC: ≤ 8.0 tons/year PM: ≤ 1.0 tons/year PM_{10}: ≤ 1.0 tons/year $PM_{2.5}$: ≤ 1.0 tons/year (Title I limits to avoid PSD) PM: variable with load Opacity: < 20% (Minn. R. 7011.0715)	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	Panel filters (CE073 & CE074) are subject to CAM; see GP026.
EU493 (CSI hand spray booth)	VOC: ≤ 6.0 tons/year PM: ≤ 3.1 tons/year PM_{10}: ≤ 3.1 tons/year $PM_{2.5}$: ≤ 3.1 tons/year (Title I limits to avoid PSD) PM: variable with load	Proper panel filter O&M Daily Recordkeeping and calculation of VOC and particulate emissions	See GP027 for panel filter requirements.

Source	Limit	Dates Tested	Results (most recent only)	Required Test Frequency
GP002/CE001[(1)]	PM: 0.002 gr/dscf			By end of 2014
	PM_{10}: 0.002 gr/dscf			
	Air Flow: 91,800 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	57,587 acfm	annually
GP003/CE003[(1)]	PM: 0.002 gr/dscf	9/1/2010	0.00013 gr/dscf	Every 60 months
	PM_{10}: 0.002 gr/dscf	9/1/2010	0 gr/dscf	Every 60 months
	Air Flow: 76,500 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	32,513 acfm	annually
GP004/CE005[(1)]	PM: 0.002 gr/dscf	9/27/2007	0.0007 gr/dscf	By 9/30/2017 and every 60 months thereafter
	PM_{10}: 0.002 gr/dscf	9/7/2007	0.0002 gr/dscf	
	Air Flow: 46,000 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	17,738 acfm	annually
GP005/CE009[(1)]	PM: 0.002 gr/dscf	10/30/2009	0 gr/dscf	Every 60 months
	PM_{10}: 0.002 gr/dscf	10/30/2009	0 gr/dscf	Every 60 months
	Air Flow: 115,300 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	40,510 acfm	annually
GP006/CE019[(1)]	PM: 0.002 gr/dscf			By end of 2015
	PM_{10}: 0.002 gr/dscf			
	Air Flow: 57,600 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010	15,617 acfm	annually

Source	Limit	Dates Tested	Results (most recent only)	Required Test Frequency
		12/7/2011		
GP009/CE020[(1)]	PM: 0.002 gr/dscf	10/15/2008	0.000007 gr/dscf	Every 60 months
	PM_{10}: 0.002 gr/dscf	10/15/2008	0.00006 gr/dscf	Every 60 months
	Air Flow: 140,849 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	52,498 acfm	annually
GP011/CE021[(1)]	PM: 0.002 gr/dscf			By end of 2016
	PM_{10}: 0.002 gr/dscf			
	Air Flow: 140,849 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	26,286 acfm	annually
GP012/SV027/ EU014 EU015	PM: 0.1 lb/MMBtu	12/7/2011	0.021 lb/MMBtu	Every 60 months
	PM_{10}: 0.1 lb/MMBtu	12/7/2011	0.017 lb/MMBtu	Every 60 months
GP021/CE060[(1)]	PM: 0.002 gr/dscf	9/2012	Results pending	Every 60 months
	PM_{10}: 0.002 gr/dscf	9/2012	Results pending	Every 60 months
	Air Flow: 72,440 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	26,889 acfm	annually
GP024/SV064[(1)]	PM: 0.002 gr/dscf	12/7/2011	0.00045 gr/dscf	Every 60 months
	PM_{10}: 0.002 gr/dscf	12/7/2011	0.00045 gr/dscf	Every 60 months
	Air Flow: 83,040 acfm	9/27/2007 10/14/2008 10/26/2009 8/31/2010 12/7/2011	30,200 acfm	annually