

Lane Regional Air Protection Agency  
 Standard Air Contaminant Discharge Permit

Review Report

**Rosboro Company, LLC – Vaughn Facility**  
**Permit No. 200550**  
**22833 Vaughn Road**  
**Veneta, OR 97487**

**Source Information:**

SIC	2439
NAICS	321213
Source Categories (LRAPA Title 37, Table 1)	B – 45 Structural Wood Members

	C – 3 Electing to Maintain Baseline
Public Notice Category	II

**Compliance and Emissions Monitoring Requirements:**

Unassigned emissions	X
Emission credits	
Compliance schedule	
Source test [date(s)]	See permit

COMS	
CEMS	
Ambient monitoring	

**Reporting Requirements**

Annual report (due date)	March 1
SACC (due date)	
Quarterly report (due dates)	

Monthly report (due dates)	
Excess emissions report	
Other reports	

**Air Programs**

NSPS (list subparts)	
NESHAP (list subparts)	A, DDDDD
CAM	
Regional Haze (RH)	
Synthetic Minor (SM)	
Part 68 Risk Management	
Title V	Prior to 2011

ACDP (SIP)	
New Source Review (NSR)	
Prevention of Significant Deterioration (PSD)	
Acid Rain	
Clean Air Mercury Rule (CAMR)	
TACT	X

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**REVIEW REPORT**

**Rosboro Company, LLC**

**Vaughn Facility**

22833 Vaughn Road  
Veneta, OR 97487

**Permit No. 200550**

1. General Background Information

Rosboro Lumber Company LLC owns and operates a laminated beam manufacturing facility (Vaughn Laminating Complex) located on 22833 Vaughn Road in Veneta, Oregon. The facility was previously operating under an Oregon Title V Operating Permit but applied for a Standard ACDP on September 23, 2010. The facility has been operating by way of a Standard ACDP since March 24, 2011. The facility has one (1) operating scenario and can be operated as much as 24 hours per day, 7 days per week, and 52 weeks per year.

Dried lumber is brought to the facility via truck or rail car. The facility formerly brought rough green lumber into the facility and sent it to the steam heated kilns onsite for drying, but, with the change from Title V to ACDP, the facility no longer operates the dry kilns; the dry kilns are not operational as of this renewal. The dry lumber is trimmed and scarfed before finger jointing. Trim ends are chipped in a hog and combined with sawdust for sale. The lumber is then finger jointed and cured in a radio frequency tunnel. After lams are cut to length, adhesive is applied to each lam of the beam just prior to placing them in another radio frequency press. After the pressing, the laminated beams may be planed, patched, cut to length and sanded or trucked to the Springfield facility for finishing. The finished laminated beams are wrapped and shipped offsite. Raw materials, including adhesive, patching material, paints, inks, and solvents, come from offsite. When operating, a hogged fuel-fired boiler supplies all steam used onsite. Most of the hogged fuel comes from offsite, but the boiler in EU-Boiler wasn't operated during the previous permit term and the hogged fuel pile is currently non-existent.

2. Emission Units

The emission units regulated by this permit are the following:

Emission Unit (EU)	Emission Unit Description	Control Equipment
<b>EU-Boiler</b>	<b>Boiler:</b> M.A. Roberts & Co., wood-fired, dutch oven, 35 MMBtu/hr, 35 M lb steam/hr, 150 psi steam, 1939 mfg, 1952 installed	Multiclone 1: Western Precipitation Co. P-21396-AO, installed 1952
<b>EU-Lam</b>	<b>Lam:</b> Glue Laminated Beam Production	None
<b>EU-Finish</b>	<b>Finish:</b> Glue Laminated Beam finishing	None

<b>EU-MH</b>	<b>Material Handling (MH):</b> Roads –paved and unpaved, dry sawdust, shavings, and sanderdust pneumatically conveyed to truck bin. Also truck bin unloading	Two (2) Baghouses: B1: Carter-Day (installed 1988), and B-3: Donaldson (installed 1990)
<b>EU-Pile</b>	<b>Pile:</b> Hog fuel storage and handling	None

3. Reasons for Permit Action

The facility was previously operating under an LRAPA Title V Operating Permit that expired on May 1, 2010. The facility applied for a renewal of the Standard ACDP in a timely manner on August 21, 2015. The primary reason for the permit action is to renew the existing permit that expired on March 24, 2016.

4. Enforcement History

Following is a summary of the enforcement activity related to the facility.

On 4/6/01 Notice of Non-Compliance (NON) No. 2236 was issued to the facility for failure to have a certified observer make an opacity observation during the 4<sup>th</sup> quarter of the year 2000. No civil penalty was issued and the file was closed 5/31/01.

On 4/6/01 NON No. 2238 was issued to the facility for an inadvertent shutting off of main power which shut off all the baghouses, causing them to abort and emit excess particulate matter. No civil penalty was issued and the file was closed 5/31/01.

5. Baseline Emission Rate (BER)

The 1978 baseline production rates for the facility were established during the previous permitting action and are in the following table.

Production or Process Parameter	Parameter Type	Rate	Units
Plywood (3/8" Basis)	Annual Production	72.0	MMSF - 3/8" basis
Veneer Dried	Annual Veneer Dried	72,000	MSF - 3/8" basis
Boiler	Annual Amount of Steam Generated	772.8	1000 lbs of steam

The GHG baseline production rate was established by the facility for the 2010 calendar year. The total steam produced during 2010 was 270,201 MMBtu/year.

The 1978 Baseline Emission Rates are shown in the table below.

Pollutant	1978 Baseline Emission Rate from the Title V Permit – Corrected in 1996 (tons/year)	1978 Baseline Emission Rate from the Standard Permit – Corrected in 2011 (tons/year)
PM	367.4	364 (-3.4)
PM <sub>10</sub>	174.7	166 (-8.7)
PM <sub>2.5</sub>	NA	NA
CO	660.7	580 (-80.7)
NO <sub>x</sub>	131.0	147 (+16.0)
SO <sub>2</sub>	4.6	4.6
VOC	87.3	46 (-41.3)
GHG	NA	NA

- The dry kiln PM and PM<sub>10</sub> emission factors were updated from NCASI (0.201 lb/MBF) to the more current, smaller emission factor.
- The CO emission factor for HF Boiler 4 was changed from the AP-42 EF (2.20 lb/M lb steam) to the same factor used for the other HF Boilers (1-3)
- The NO<sub>x</sub> emission factor for HF Boiler 4 was changed from the AP-42 EF (0.243 lb/M lb steam) to the same factor used for the other HF Boilers (1-3)
- The dry kiln VOC emission factor was updated from NCASI (3.1681 x 0.76 lb/MBF) to the more current, smaller emission factor.

#### 6. Netting Basis (NB)

The netting basis (NB) established in 2011 was corrected with the 2016/2017 renewal. The NB was revised again with the new emission factors calculated based upon source testing for the boiler.

Pollutant	Title V Pre 7/1/10 NB – Use Baseline Corrected in 2011 (tons/year)	Title V Post 7/1/10 NB (tons/year)*	2011 ACDP NB Corrected (tons/year)**	2016 ACDP NB (tons/year)***
PM	364	283	124	124
PM <sub>10</sub>	166	166	77	77
PM <sub>2.5</sub>	NA	NA	NA	38
CO	580	330	199	199
NO <sub>x</sub>	147	99	98	98
SO <sub>2</sub>	4.6	5	4	4
VOC	46	46	29	29
GHG	NA	NA	28,311	28,311

\* The Pre 7/1/10 NB was reduced by the amount the unassigned emissions were reduced.

\*\* The Title V Post 7/1/10 NB was reduced by the amount the PSELs were reduced when the facility went from Title V PSELs to Standard ACDP PSELs in 2011.

\*\*\* The 2016 NB equals the 2011 NB because there have been no changes to emission factor calculations.

The following table compares the baseline emission rate, capacity, potential to emit, unassigned emissions, netting basis and PSELs. The detail sheets contain more information about these emissions. All values are in tons/year.

## 7. Plant Site Emission Limits (PSELs)

The previous permit included Plant Site Emission Limits (PSELs) for PM, PM<sub>10</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub> and VOC. PM<sub>2.5</sub> and Greenhouse Gases (GHG) were listed as pollutants in 2010-2011 under a temporary rule, but those rules expired prior to the issuance of the 2011 renewal; they were later established under permanent rule in 2011 after the renewal had been issued. PSELs for PM<sub>2.5</sub> and GHG and are being established in this permit, along with the respective netting basis.

- The proposed PSEL for PM<sub>2.5</sub> is less than the PSEL for PM<sub>10</sub> due to assumptions of PM<sub>2.5</sub> percentages of PM<sub>10</sub>.
- The proposed PSEL for GHG is the Generic PSEL level since the potential to emit is less than the significant emission rate (SER) for GHG.
- PSEL calculations are shown in the Emission Detail Sheets.

Provided below is a summary of the baseline emission rate, netting basis, plant site emission limits and a comparison the PSEL increase over the netting basis to the significant emission rate (SER):

Pollutant	Baseline Emission Rate (tons/year)	Netting Basis		Plant Site Emission Limit (PSEL)			Capacity (tons/year)
		Previous* (tons/year)	Proposed (tons/year)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	PSEL Increase (tons/year)	
PM	364	124	124	99	98	-2	98
PM <sub>10</sub>	166	77	77	99	92	-6	93
PM <sub>2.5</sub>	NA	NA	38	NA	46	NA	46
CO	580	199	199	99	99	0	229
NO <sub>x</sub>	147	98	98	58	58	0	58
SO <sub>2</sub>	4.6	4	4	39	39	0	2
VOC	46	29	29	39	39	0	29
GHG	28,311	28,311	28,311	NA	74,000	NA	31,615

\* The previous netting basis was corrected with this proposed renewal to be consistent with the definition of the term in Title 12.

Where:

- Capacity is the maximum emissions under the source's physical and operational design.
- Potential to Emit (PTE) is the lesser of the "capacity" or maximum allowable emissions (synthetic minor limit for pollutants with a PTE > 100 tpy).
- Unassigned emissions equal the baseline or netting basis minus the source's current PTE.
- Unassigned emissions were reduced to no more than a Significant Emission Rate (SER) on July 1, 2010 as per LRAPA Title 42, and as "SER" are defined in LRAPA Title 12.
- The netting basis was reduced by the amount that the unassigned emissions were reduced.
- For pollutants with the potential to emit less than the SER, the PSEL is set at the Generic PSEL level.
- For pollutants with the potential to emit greater than the SER (that is, greater than an SER over the baseline or netting basis), the PSEL is set at a level of one ton less than the SER over the PTE or netting basis, whichever is less.
- For PTE/Netting Basis greater than the 100 ton per year major source threshold, the PSELs and Netting Basis are set at one ton less (99 tons/yr).
- PM<sub>2.5</sub> netting basis is established with this proposed renewal. The calculations are in the emission detail sheets attached to this review report.
- The GHG baseline emission rate is established with this proposed renewal and are based upon actual emissions from the 2000 calendar year.

8. Other Emission Limitations

The facility is subject to the visible emissions standards in OAR 340-208-0110(4) and the particulate grain-loading standard in OAR 340-226-0210(b)(B) because DEQ adopted versions of these rules on April 16, 2015 that were determined to be more stringent than the existing LRAPA versions of these rules (LRAPA 32-010 and 32-015, respectively).

9. Hazardous Air Pollutants (HAPs)

The facility does not have the potential to be a major HAP source. The potential to emit for HAPs are as follows:

- 4.6 tons/year of Methanol (highest HAP),
- 17.4 tons/year of total HAPs.

Previous HAP emission estimates included ethanol, but those emissions were removed since ethanol is not defined as a HAP.

10. Typically Achievable Control Technology (TACT)

LRAPA Title 32-008 requires an existing emission unit at a facility to meet TACT if the emissions unit has emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutant or five (5) tons per year of particulate, the emissions unit is not subject to the emissions standards under LRAPA Title 32, Title 33, Title 39, or Title 46 for the pollutants emitted, and the facility is required to have a permit. The only emissions units at the facility that meet these criteria are the boiler (EU-Boiler) and beam lam (EU-Lam). LRAPA 32-001 defines TACT for existing sources as the emission level that is typical of emissions units that are similar in type and size as the affected emissions unit. The wood-fired boiler gaseous emissions are greater than 10 tons/year and are therefore required to meet TACT; good combustion practices are considered TACT for the boiler. The beam lam emission unit (EU-Lam) emits more than 10 tons/year of VOC and are therefore required to meet TACT; LRAPA has determined that beam lam operations typically do not have VOC controls.

11. New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

Because the proposed PSEs for all regulated pollutants are below the Significant Emission Rates (SERs) in LRAPA Title 38, the facility is not subject to LRAPA's New Source Review (NSR) requirements.

12. National Emission Standards for Hazardous Air Pollutants (NESHAPs)

As an area source of HAPs, the facility's boiler is subject to the Boiler Area Source NESHAP (40 CFR Part 63 Subpart JJJJJJ). The facility must conduct an initial tune-up of the boiler within 30 days of restarting operation of the boiler and every two years (biennially) thereafter. A Notice of Compliance Status is required to be submitted within 120 days of conducting the initial tune-up.

The facility is not subject to the Plywood and Composite Wood Products (PCWP) NESHAP under 40 CFR Part 63 Subpart DDDD (applicable only to major sources) because the facility is an area source of HAPs.

13. New Source Performance Standards (NSPSs)

There are no emission units or devices subject to any NSPSs.

14. Performance Test Results

The following are the test results since 1998:

EU	Date	Pollutant	Result
Boiler	October 23, 2007	PM	0.42 lb/M lb steam
		CO	2.3 lb/M lb steam
		NO <sub>x</sub>	0.30 lb/M lb steam
Boiler	August 29, 2002	PM	0.25 lb/M lb steam
		CO	0.24 lb/M lb steam
		NO <sub>x</sub>	0.32 lb/M lb steam
		VOC	0.0 lb/M lb steam
Boiler	September 6, 2001	PM	0.25 lb/M lb steam
		CO	0.21 lb/M lb steam
		NO <sub>x</sub>	0.31 lb/M lb steam
		VOC	0.01 lb/M lb steam
Boiler	February 10, 2000	PM	0.57 lb/M lb steam
		CO	0.06 lb/M lb steam
		NO <sub>x</sub>	0.33 lb/M lb steam
		VOC	0.01 lb/M lb steam
Boiler	February 12, 1998	PM	0.41 lb/M lb steam
		CO	0.40 lb/M lb steam
		NO <sub>x</sub>	0.36 lb/M lb steam
		VOC	0.01 lb/M lb steam

The permit requires CO, NO<sub>x</sub>, and PM<sub>10</sub> emission factor verification testing for the wood-fired boiler within 180 days of boiler startup.

15. Reporting Requirements

The facility is required to submit an annual summary by March 1st of each year to document compliance with the PSELs in the permit and to provide an estimate of Greenhouse Gas (GHG) emissions if emissions for the calendar year are equal to or greater than 2,500 metric tons of CO<sub>2</sub> equivalents (CO<sub>2</sub>e) in accordance with ODEQ Division 215 by March 31<sup>st</sup> each year.

16. Public Notice

The draft permit was on public notice from January 24, 2017 to February 28, 2017. No written comments were submitted during the 35-day comment period.

Rosboro Vaughn							
Permit No. 200550							
Criteria Pollutant Summary							
Source	Production Rate	units	Pollutant	Emission Factor	units	Reference	Emissions (ton/yr)
Boiler	305,760	(M lb steam/yr)	PM	0.63	(lb/M lb steam)	Ave of representative test results	96.1
Boiler	305,760	(M lb steam/yr)	PM10	0.60	(lb/M lb steam)	Ave of representative test results	91.3
Boiler	305,760	(M lb steam/yr)	PM2.5	0.30	(lb/M lb steam)	assume 50%	45.7
Boiler	305,760	(M lb steam/yr)	CO	1.5	(lb/M lb steam)	Ave of representative test results	229.3
Boiler	305,760	(M lb steam/yr)	NOx	0.38	(lb/M lb steam)	Ave of representative test results	58.1
Boiler	305,760	(M lb steam/yr)	SO2	0.012	(lb/M lb steam)	DEQ AQ-EF02	1.8
Boiler	305,760	(M lb steam/yr)	VOC	0.029	(lb/M lb steam)	Ave of representative test results	4.4
Boiler	305,760	(M lb steam/yr)	GHG (CO2)	93.8	(kg/mmBtu)	DEQ GHG Calculator for Steam	32,036
Pile	38,000	cu unit/yr	PM	0.007	lb/cu unit	TV Permit	0.1
Pile	38,000	cu unit/yr	PM10	0.004	lb/cu unit	TV Permit	0.1
Pile	38,000	cu unit/yr	PM2.5	0.000555	lb/cu unit	DEQ -EF08: 15% of PM10	0.0
Pile	38,000	cu unit/yr	VOC	0.1812	lb/cu unit	NCASI Tech Bul. 723 Pg. 14	3.4
Lam	90,000	MBF/yr	VOC	0.43	lb/MBF	Sealed caul plate test & MBF conversion	19.4
Finish	Material Balance		VOC	NA	NA	NA	1.5
MH*	11,000	cu unit/yr	PM	0.276	lb/cu unit	AP42 converted	1.5
MH*	11,000	cu unit/yr	PM10	0.276	lb/cu unit	AP42 converted	1.5
MH*	11,000	cu unit/yr	PM2.5	0.138	lb/cu unit	AP42 & assume 25% of PM10	0.8
*MH (material handling) includes truck bin loadout and road fugitive emissions							
Baghouse B1	11,000	cu unit/yr	PM	0.0012	lb/cu unit	DEQ AQ-EF02 converted to units	0.0066
Baghouse B1	11,000	cu unit/yr	PM10	0.0012	lb/cu unit	DEQ AQ-EF02 converted to units	0.0066
Baghouse B1	11,000	cu unit/yr	PM2.5	0.001	lb/cu unit	DEQ AQ-EF08: assume 100% of PM10	0.007
Baghouse B3	11,000	cu unit/yr	PM	0.0012	lb/cu unit	DEQ AQ-EF02 converted to units	0.0066
Baghouse B3	11,000	cu unit/yr	PM10	0.0012	lb/cu unit	DEQ AQ-EF02 converted to units	0.0066
Baghouse B3	11,000	cu unit/yr	PM2.5	0.0012	lb/cu unit	DEQ AQ-EF08: assume 100% of PM10	0.007
Pollutant		Capacity					
PM		98					
PM10		93					
PM2.5		46					
CO		229					
NOx		58					
SO2		2					
VOC		29					
GHG		32036					
Capacity is the maximum emissions under the source's physical and operational design							

**Rosboro Vaughn**

**Permit No. 200550**

**Netting Basis (NB) and Unassigned Emissions**

Pollutant	Baseline Emission Rate - corrected 2011 (tons/year)	Netting Basis				Potential to Emit (PTE)			PSL Increase over Netting Basis 2016 (tons/yr)	SER (tons/yr)	Unassigned Emissions			
		Title V Pre 7/1/10 NB - Use Baseline Corrected in 2011 (tons/yr)	Title V Post 7/1/10 NB (tons/yr)	2011 ACDP NB Corrected (tons/yr)	2016 ACDP NB (tons/yr)	Title V PSEL = Capacity Pre 2011 (tons/yr)	Lesser of Capacity or ACDP PSEL 2011 (tons/yr)	Lesser of Capacity or ACDP PSEL 2016 (tons/yr)			Title V Pre 7/1/10 NB (tons/yr)	Title V Post 7/1/10 NB (tons/yr)	2011 ACDP Corrected (tons/yr)	2016 ACDP Renewal (tons/yr)
PM	364	364	283	124	124	258	99	98	-26	25	106	25	26	26
PM <sub>10</sub>	166	166	166	77	77	188	99	92	15	15	0	0	-15	-15
PM <sub>2.5</sub>	NA	NA	NA	NA	38	NA	NA	46	7	10	NA	NA	-8	-8
CO	580	580	330	199	199	230	99	99	-100	100	350	100	100	100
NO <sub>x</sub>	147	147	99	98	98	59	58	58	-40	40	88	40	40	40
SO <sub>2</sub>	4.6	5	5	4	4	3	1.8	1.8	35	40	2	2	2	2
VOC	46	46	46	29	29	46	29	29	10	40	0	0	0	0
GHG	28311	NA	NA	28,311	28311	NA	NA	32037	45689	75,000	NA	NA	0	-3726

Potential to Emit (PTE) is the lesser of the "capacity" or maximum allowable emissions (PSEL)

Capacity is the maximum emissions under the source's physical and operational design

Unassigned emissions equal the netting basis minus the source's current PTE

Unassigned emissions were reduced to no more than an SER on July 1, 2010 as per LRAPA Title 42

By rule (Title 42) the netting basis was reduced by the amount that the unassigned emissions were reduced on July 1, 2010.

The netting basis was reduced further by the reductions from the Title V PSELs to the Synthetic Minor/ACDP PSELs in 2011.

The 2011 netting basis was corrected in 2016 to be consistent with the netting basis rule/definition in Title 12.

<b>Rosboro Vaughn</b>						
<b>Permit No. 200550</b>						
<b>Baseline Emission Rates</b>						
<b>PM</b>						
Emission device	Rate	Units	PMEF	units	Reference	PM tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	0.2664	lb/M lb steam	1978 source test	30.9
HF Boiler 2	154.56	MM Lb steam/yr	1.0359	lb/M lb steam	1978 source test	80.1
HF Boiler 3	154.56	MM Lb steam/yr	1.0359	lb/M lb steam	1978 source test	80.1
HF Boiler 4	231.84	MM Lb steam/yr	0.435	lb/M lb steam	1978 source test	50.4
Kilns	48,300	MBF/yr	0.05	lb/MBF	General Permit*	1.2
Veneer Dryer 1	36,000	MSF/yr	0.519	lb/MSF	TV Permit/DEQ	9.3
Veneer Dryer 2	36,000	MSF/yr	0.519	lb/MSF	TV Permit/DEQ	9.3
Sawmill/Planer Cyclones	86,363,580.00	lbs/yr	0.5	lb/BDT	TV Permit/DEQ	10.80
Plywood Cyclones/BHs	2,108,160.00	lbs/yr	0.04	lb/BDT	TV Permit/DEQ	0.02
Roads Unpaved - Saw	200,000	BF/day			TV Permit	2.3
Roads Unpaved - Ply	180,822	SF/day			TV Permit	7.9
Roads Paved - Saw	200,000	BF/day			TV Permit	18.4
Roads Paved - Ply	180,822	SF/day			TV Permit	63.2
<b>TOTAL</b>						<b>363.9</b>
*The dry kiln PM and PM10 emission factors were updated from NCASI (0.201 lb/MBF) to the more current, smaller emission factor.						
<b>PM10</b>						
Emission device	Rate	Units	PM10 EF	units	Reference	PM10 tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	0.1332	lb/M lb steam	50%PM10 General	15.4
HF Boiler 2	154.56	MM Lb steam/yr	0.51795	lb/M lb steam	50%PM10 General	40.0
HF Boiler 3	154.56	MM Lb steam/yr	0.51795	lb/M lb steam	50%PM10 General	40.0
HF Boiler 4	231.84	MM Lb steam/yr	0.2175	lb/M lb steam	50%PM10 General	25.2
Kilns	48,300	MBF/yr	0.05	lb/MBF	General Permit*	1.2
Veneer Dryer 1	36,000	MSF/yr	0.519	lb/MSF	TV Permit/DEQ	9.3
Veneer Dryer 2	36,000	MSF/yr	0.519	lb/MSF	TV Permit/DEQ	9.3
Sawmill/Planer Cyclones	86,363,580.00	lbs/yr	0.25	lb/BDT	TV Permit/DEQ	5.4
Plywood Cyclones/BHs	2,108,160.00	lbs/yr	0.04	lb/BDT	TV Permit/DEQ	0.0
Roads Unpaved - Saw	200,000	BF/day			TV Permit	0.8
Roads Unpaved - Ply	180,822	SF/day			TV Permit	2.8
Roads Paved - Saw	200,000	BF/day			TV Permit	3.7
Roads Paved - Ply	180,822	SF/day			TV Permit	12.6
<b>TOTAL</b>						<b>165.9</b>
*The dry kiln PM and PM10 emission factors were updated from NCASI (0.201 lb/MBF) to the more current, smaller emission factor.						
<b>CO</b>						
Emission device	Rate	Units	CO EF	units	Reference	CO tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	1.5	lb/M lb steam	ST from Foster plant 9/25/92	173.9
HF Boiler 2	154.56	MM Lb steam/yr	1.5	lb/M lb steam	ST from Foster plant 9/25/92	115.9
HF Boiler 3	154.56	MM Lb steam/yr	1.5	lb/M lb steam	ST from Foster plant 9/25/92	115.9
HF Boiler 4*	231.84	MM Lb steam/yr	1.5	lb/M lb steam	ST from Foster plant 9/25/92	173.9
<b>TOTAL</b>						<b>579.6</b>
* The CO emission factor for HF Boiler 4 was changed from the AP-42 EF (2.20 lb/M lb steam) to the same factor used for the other HF Boilers (1-3)						
<b>NOx</b>						
Emission device	Rate	Units	NOx EF	units	Reference	NOx tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	0.38	lb/M lb steam	ST from Foster plant 9/25/91	44.0
HF Boiler 2	154.56	MM Lb steam/yr	0.38	lb/M lb steam	ST from Foster plant 9/25/91	29.4
HF Boiler 3	154.56	MM Lb steam/yr	0.38	lb/M lb steam	ST from Foster plant 9/25/91	29.4
HF Boiler 4	231.84	MM Lb steam/yr	0.38	lb/M lb steam	ST from Foster plant 9/25/91	44.0
<b>TOTAL</b>						<b>146.8</b>
<b>SO2</b>						
Emission device	Rate	Units	SO2EF	units	Reference	SO2 tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	1.4
HF Boiler 2	154.56	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	0.9
HF Boiler 3	154.56	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	0.9
HF Boiler 4	231.84	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	1.4
<b>TOTAL</b>						<b>4.6</b>

<b>Rosboro Vaughn</b>						
<b>Permit No. 200550</b>						
<b>Baseline Emission Rates</b>						
<b>VOC</b>						
Emission device	Rate	Units	SO2EF	units	Reference	VOC tons/yr
HF Boiler 1	231.84	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	1.4
HF Boiler 2	154.56	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	0.9
HF Boiler 3	154.56	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	0.9
HF Boiler 4	231.84	MM Lb steam/yr	0.012	lb/M lb steam	ST from Foster plant 9/25/91	1.4
Kilns	48,300	MBF/yr	1.7	lb/MBF	General Permit for P.Pine*	41.1
Veneer Dryer 1	36,000	MSF/yr	0.3217	lb/MSF	DEQ- 2 STs from Foster Plant & 1 std	5.8
Veneer Dryer 2	36,000	MSF/yr	0.3217	lb/MSF	DEQ- 2 STs from Foster Plant & 1 std	5.8
Presses 1	28,800	MSF/yr	0.07	lb/MSF	General Permit**	1.0
Presses 2	43,200	MSF/yr	0.07	lb/MSF	General Permit**	1.5
Storage Piles	125,008	tons/yr	0.076	lb/ton	NCASI, TV permit	4.8
<b>TOTAL</b>						<b>45.7</b>
*The dry kiln VOC emission factor was updated from NCASI (3.1681 x 0.76 lb/MBF) to the more current, smaller emission factor.						
**The plywood press VOC emission factor was updated from AP42 (0.0243 lb/MBF) to the more current, but larger, emission factor in the General Permi						
<b>GHG</b>						
Boiler	270,201	MMBtu/yr	93.8	kg CO2/MMBtu	DEQ GHG Calculator, 40 CFR Part 98	27937.92
Boiler	270,201	MMBtu/yr	0.0072	kg CH4/MMBtu	DEQ GHG Calculator, 40 CFR Part 98	2.14
Boiler	270,201	MMBtu/yr	0.0036	kg N2O/MMBtu	DEQ GHG Calculator, 40 CFR Part 98	1.07
The GHG baseline emisison rate is based upon the 2010 calendar year steaming rate.					<b>TOTAL (short tons)</b>	<b>28,311</b>
<b>Baseline Emission Rate Totals</b>						
Pollutant	tons/yr					
PM	364					
PM10	166					
PM2.5	NA					
CO	580					
NOx	147					
SO2	4.6					
VOC	46					
GHG	28,311					

Rosboro Vaughn						
Permit No. 200550						
HAPs						
Source	pollutant	Production Rate	Emission Factor	Reference	Annual Emissions	
Boiler	Acetaldehyde	46,000 ton/yr	0.01411 lb/ton hog fuel	TV permit/Ap42	0.32 ton/yr	
Boiler	Acrolein	46,000 ton/yr	0.0680 lb/ton hog fuel	TV permit/Ap42	1.56 ton/yr	
Boiler	Benzene	46,000 ton/yr	0.0714 lb/ton hog fuel	TV permit/Ap42	1.64 ton/yr	
Boiler	Formaldehyde	46,000 ton/yr	0.0221 lb/ton hog fuel	TV permit/ncasi	0.51 ton/yr	
Boiler	Methanol	46,000 ton/yr	0.0143 lb/ton hog fuel	TV permit/ncasi	0.33 ton/yr	
Boiler	Napthalene	46,000 ton/yr	0.0016 lb/ton hog fuel	TV permit/Ap42	0.04 ton/yr	
Boiler	Phenol	46,000 ton/yr	0.0009 lb/ton hog fuel	TV permit/Ap42	0.02 ton/yr	
Boiler	Propionaldehyde	46,000 ton/yr	0.0010 lb/ton hog fuel	TV permit/Ap42	0.02 ton/yr	
Boiler	Styrene	46,000 ton/yr	0.0323 lb/ton hog fuel	TV permit/Ap42	0.74 ton/yr	
Boiler	Toluene	46,000 ton/yr	0.0156 lb/ton hog fuel	TV permit/Ap42	0.36 ton/yr	
Boiler	Xylene	46,000 ton/yr	0.0004 lb/ton hog fuel	TV permit/Ap42	0.01 ton/yr	
Boiler	HCL	46,000 ton/yr	0.1139 lb/ton hog fuel	TV permit/Ap42	2.62 ton/yr	
Boiler	Arsenic	46,000 ton/yr	0.0004 lb/ton hog fuel	TV permit/Ap42	0.01 ton/yr	
Boiler	Cadmium	46,000 ton/yr	0.0001 lb/ton hog fuel	TV permit/Ap42	0.00 ton/yr	
Boiler	Chromium	46,000 ton/yr	0.0004 lb/ton hog fuel	TV permit/Ap42	0.01 ton/yr	
Boiler	Lead	46,000 ton/yr	0.0008 lb/ton hog fuel	TV permit/Ap42	0.02 ton/yr	
Boiler	Manganese	46,000 ton/yr	0.0272 lb/ton hog fuel	TV permit/Ap42	0.63 ton/yr	
Boiler	Mercury	46,000 ton/yr	0.0001 lb/ton hog fuel	TV permit/Ap42	0.00 ton/yr	
Boiler	Nickel	46,000 ton/yr	0.0001 lb/ton hog fuel	TV permit/Ap42	0.00 ton/yr	
Boiler	Selenium	46,000 ton/yr	0.0000476 lb/ton hog fuel	TV permit/Ap42	0.00 ton/yr	
Boiler	Total	46,000 ton/yr	0.38465 lb/ton hog fuel	sum of above	8.85 ton/yr	
Lam Production	Formaldehyde	90,000 MBF/yr	0.034 lb/MBF	TV permit converted	1.5 ton/yr	
Lam Production	Phenol	90,000 MBF/yr	0.039 lb/MBF	TV permit converted	1.8 ton/yr	
Lam Production	Propanol	90,000 MBF/yr	0.021 lb/MBF	TV permit converted	0.9 ton/yr	
Lam Production	Methanol	90,000 MBF/yr	0.095 lb/MBF	TV permit converted	4.3 ton/yr	
Lam Production	Total HAP				8.5 ton/yr	
Finish Face Repair	Formaldehyde	1,500 lbs	0.00019 lb/lb	TV permit- Borden	0.0001 ton/yr	
Finish Face Repair	Methanol	1,500 lbs	0.00037 lb/lb	TV permit- Borden	0.0003 ton/yr	
Finish Gap Filling	Formaldehyde	1,500 lbs	0.00038 lb/lb	TV permit- Borden	0.0003 ton/yr	
Finish Gap Filling	Methanol	1,500 lbs	0.00074 lb/lb	TV permit- Borden	0.0006 ton/yr	
Finish - Hand Putty	Styrene	500 lbs	0.27 lb/lb	TV permit MSDS	0.0675 ton/yr	
Finish	Total HAP				0.0688 ton/yr	
B1 or B3 - joist saw	Methanol		0.01600 lb/MLF	General Permit	NA	
B1 or B3 -sander	Acetaldehyde		0.00300 lb/MSF	General Permit	NA	
B1 or B3 -sander	Formaldehyde		0.00200 lb/MSF	General Permit	NA	
B1 or B3 -sander	Methanol		0.01200 lb/MSF	General Permit	NA	
		Potential				
Pollutant	Pollutant	Emissions (ton/yr)				
Highest Single HAP	Methanoi	4.6				
Total HAPs	Sum	17.4				

Rosboro Vaughn				
Permit No. 200550				
Emission Factors				
Criteria Pollutants				
Source	Pollutant	Emission Factor	units	Reference
Boiler	PM	0.63	(lb/M lb steam)	Ave of representative test results
Boiler	PM10	0.60	(lb/M lb steam)	DEQ AQ-EF03 95% of PM for hi press multiclon
Boiler	PM2.5	0.50	(lb/M lb steam)	DEQ AQ-EF03 80% of PM for hi press multiclon
Boiler	CO	0.64	(lb/M lb steam)	Ave of representative test results
Boiler	NOx	0.34	(lb/M lb steam)	Ave of representative test results
Boiler	SO2	0.014	(lb/M lb steam)	DEQ AQ-EF02
Boiler	VOC	0.031	(lb/M lb steam)	Ave of representative test results
Pile	PM	0.0074	lb/cu unit	TV Permit 6-1-05 Form ED608*
Pile	PM10	0.0037	lb/cu unit	TV Permit (50% of PM)
Pile	PM2.5	0.000555	lb/cu unit	DEQ -EF08: 15% of PM10
Pile	VOC	0.1812	lb/cu unit	NCASI Tech Bul. 723 Pg. 14
Lam	VOC	0.43	lb/MBF	Sealed caul plate test & MBF conversion (TV permit) - See "Lam EF" tab
Finish	VOC	Material Balance		MSDS
MH	PM	0.276	lb/cu unit	AP42 converted to cu unit from 0.33 lb/ton using 0.835 ton/cu unit**
MH	PM10	0.276	lb/cu unit	AP42 converted to cu unit from 0.33 lb/ton using 0.835 ton/cu unit
MH	PM2.5	0.138	lb/cu unit	50% of PM10 from DEQ AQ-EF08 for truck loadout
B1	PM	0.0012	lb/cu unit	DEQ AQ-EF02 (0.001 lb/BDT) converted to units (1.2 BDT/unit)
B1	PM10	0.0012	lb/cu unit	DEQ AQ-EF02 (0.001 lb/BDT) converted to units (1.2 BDT/unit)
B1	PM2.5	0.0012	lb/cu unit	DEQ AQ-EF08: assume 100% of PM10
B3	PM	0.0012	lb/cu unit	DEQ AQ-EF02 (0.001 lb/BDT) converted to units (1.2 BDT/unit)
B3	PM10	0.0012	lb/cu unit	DEQ AQ-EF02 (0.001 lb/BDT) converted to units (1.2 BDT/unit)
B3	PM2.5	0.0012	lb/cu unit	DEQ AQ-EF08: assume 100% of PM10
HAPs				
Source	Pollutant	Emission Factor	units	Reference
Boiler	Acetaldehyde	0.01411	lb/ton hog fuel	TV permit/Ap42
Boiler	Acrolein	0.0680	lb/ton hog fuel	TV permit/Ap42
Boiler	Benzene	0.0714	lb/ton hog fuel	TV permit/Ap42
Boiler	Formaldehyde	0.0221	lb/ton hog fuel	TV permit/ncasi
Boiler	Methanol	0.0143	lb/ton hog fuel	TV permit/ncasi
Boiler	Naphthalene	0.0016	lb/ton hog fuel	TV permit/Ap42
Boiler	Phenol	0.0009	lb/ton hog fuel	TV permit/Ap42
Boiler	Propionaldehyde	0.0010	lb/ton hog fuel	TV permit/Ap42
Boiler	Styrene	0.0323	lb/ton hog fuel	TV permit/Ap42
Boiler	Toluene	0.0156	lb/ton hog fuel	TV permit/Ap42
Boiler	Xylene	0.0004	lb/ton hog fuel	TV permit/Ap42
Boiler	HCL	0.1139	lb/ton hog fuel	TV permit/Ap42
Boiler	Arsenic	0.0004	lb/ton hog fuel	TV permit/Ap42
Boiler	Cadmium	0.0001	lb/ton hog fuel	TV permit/Ap42
Boiler	Chromium	0.0004	lb/ton hog fuel	TV permit/Ap42
Boiler	Lead	0.0008	lb/ton hog fuel	TV permit/Ap42
Boiler	Manganese	0.0272	lb/ton hog fuel	TV permit/Ap42
Boiler	Mercury	0.0001	lb/ton hog fuel	TV permit/Ap42
Boiler	Nickel	0.0001	lb/ton hog fuel	TV permit/Ap42
Boiler	Selenium	0.0000	lb/ton hog fuel	TV permit/Ap42
Boiler	Total	0.38465	lb/ton hog fuel	sum of above
Lam Production	Formaldehyde	0.034	lb/MBF	TV permit converted to MBF basis
Lam Production	Phenol	0.039	lb/MBF	TV permit converted to MBF basis
Lam Production	Ethanol	0.242	lb/MBF	TV permit converted to MBF basis
Lam Production	Propanol	0.021	lb/MBF	TV permit converted to MBF basis
Lam Production	Methanol	0.095	lb/MBF	TV permit converted to MBF basis

Rosboro Vaughn				
Permit No. 200550				
Emission Factors				
Finish Face Repair	Formaldehyde	0.00019	lb/lb	TV permit- Borden
Finish Face Repair	Ethanol	0.00467	lb/lb	TV permit- Borden
Finish Face Repair	Methanol	0.00037	lb/lb	TV permit- Borden
Finish Gap Filling	Formaldehyde	0.00038	lb/lb	TV permit- Borden
Finish Gap Filling	Ethanol	0.00934	lb/lb	TV permit- Borden
Finish Gap Filling	Methanol	0.00074	lb/lb	TV permit- Borden
Finish - Hand Putty	Styrene	0.27000	lb/lb	TV permit MSDS
B1 or B3 -sander	Acetaldehyde	0.00300	lb/MSF	General Permit
B1 or B3 -sander	Formaldehyde	0.00200	lb/MSF	General Permit
B1 or B3 -sander	Methanol	0.01200	lb/MSF	General Permit
*Tom Wood Note: "Average hog fuel throughput is 1500 tons/mo Emissions related to amount of HF burned as pile has minimal excess" Divided value in 2001 permit detail sheet (lbs/mo) by 1500	**Weyco Santiam = 0.086 lb/BDT AP42 9.9.1-1, Other DEQ permits use 0.061 lb/ton from AP42 Table 9.9.1-1. Since this overestimates truck unloading, assume it			

Rosboro Vaughn								
Permit No. 200550								
Lam Emission Factor								
2009 - Vaughn Data								
	RF-300 V	RF-350	6310L	MF-1L	318LY	Monthly T Pre-glue B.I Shavings offsite (units)		
Jan.	1457	3145		2570	1250	146	8,568	245,247
Feb.	2525	3570		4897	1279	136	12,407	290,771
March	2992	2038		1263	1221	137	7,651	111,319
April	2276	3584		4559	1500	162	12,081	309,651
May	643	2616		1321	1185	75	5,840	110,525
June	2953	3473		4285	1791	278	12,780	279,286
July	5301	6264		4135	2447	170	18,317	479,632
August	2118	8987		5107	2334	252	18,798	436,253
Septembe	1931	6249		4135	1728	232	14,275	442,750
October	1704	6251		4371	1736	175	14,237	378,890
Novembe	2199	5204		3613	1229	158	12,403	321,100
December	1285	5515		5561	1333	206	13,900	307,505
Total Lbs.	27,384	56,896		45,817	19,033	2,127	151,257	3,712,929
								409

  

Lam G Calculations (Finger Joint Adhesive)					
	lbs.	E.F.	Lbs./VOC	ton	tons/year
MF-1L	19,033	0.0132	251.24	2,000	0.13
318LY	2127	0.0132	<u>28.08</u>	2,000	<u>0.01</u>
			279.32		0.14

  

VOC Calculations (Lam Face Adhesive, liquid)					
RF-300V	27,384.00	0.01018	278.77	2,000	0.14
RF-350	56,896.00	0.01018	579.2	2,000	0.29
FM-6310L	45,817.00	0.01018	<u>466.42</u>	2,000	<u>0.23</u>
			1324.39		0.66

\*emission factors based on sealed caul plate data provided by Hexion 2004/2005.

Lam M Calculations based on 2008 annual report were 0.001 tons/yr.

B.F. 2009 Working C B.F./day  
3,712,929      251    14,792.55

30,000 B.F. per day goal for 2010. = 7,530,000 B.F./year.  
Assuming it takes 24 lbs. adhesive per B.F.. 313,750 lbs adhesive for 2010.

Rosboro Vaughn									
Permit No. 200550									
Lam Emission Factor									
2009 - Vaughn Data									
PRODUCTION BASED EMISSION FACTOR:				Total VOC in lb/MBF Production 0.4319258 lb VOC/MBF					
HAPs EMISSION FACTORS:				Actual Prod, 2009			Potential Prod., Renewal App		
	<u>HAP</u>	<u>Title V EF</u>	<u>Units</u>	<u>Adhesive</u>	<u>Emission</u>	<u>MBF</u>	<u>Adhesive lb</u>	<u>Emission</u>	<u>MBF</u>
Lam Face (liquid)	Formaldehyde	0.00097	lb/lb adhesive	130,097	126.19	3,713	1,900,000	1,843	90,000
	Phenol	0.00111	lb/lb adhesive	130,097	144.41		1,900,000	2,109	
	Ethanol	0.00691	lb/lb adhesive	130,097	898.97		1,900,000	13,129	
	Propanol	0.00061	lb/lb adhesive	130,097	79.36		1,900,000	1,159	
	Methanol	0.00058	lb/lb adhesive	130,097	75.46		1,900,000	1,102	
Finger Joint	Formaldehyde	0.00008	lb/lb adhesive	21,160	1.69		300,000	24	
	Methanol	0.01312	lb/lb adhesive	21,160	277.62		300,000	3,936	
Total EF, by MBF	Formaldehyde	0.034	lb/MBF					0.021	lb/MBF
	Phenol	0.039	lb/MBF					0.023	lb/MBF
	Ethanol	0.242	lb/MBF					0.146	lb/MBF
	Propanol	0.021	lb/MBF					0.013	lb/MBF
	Methanol	0.095	lb/MBF					0.056	lb/MBF
Use these factors for the application form									

Rosboro Vaughn			
Permit No. 200550			
Boiler Test Results			Dry Kiln Test Results*
Pollutant	Date	Result (lb/M lb Steam)	
PM	10/23/2007	0.42	0.15 gr/dscf
PM	8/29/2002	0.25	
PM	9/6/2001	0.25	
PM	2/23/2000	0.57	
PM	2/13/1998	0.41	
PM	9/1/1992	0.98	37.4 lb/hr
PM	8/31/1992	1.09	44.5 lb/hr
PM	12/4/1990		72.5 lb/hr
PM	3/28/1986	1.06	0.21 gr/dscf
AVERAGE		0.63 lb/M lb steam	
Pollutant	Date	Result (lb/M lb Steam)	
CO	10/23/2007	2.3	
CO	8/29/2002	0.24	
CO	9/6/2001	0.21	
CO	2/23/2000	0.06	
CO	2/13/1998	0.40	
CO	9/1/1992	5.51	excluded from average, not representative
CO	8/31/1992	8.66	excluded from average, not representative
AVERAGE		0.64 lb/M lb steam	
Pollutant	Date	Result (lb/M lb Steam)	
NOx	10/23/2007	0.30	
NOx	8/29/2002	0.32	
NOx	9/6/2001	0.31	
NOx	2/23/2000	0.33	
NOx	2/13/1998	0.36	
NOx	9/1/1992	0.44	
NOx	8/31/1992	0.35	
AVERAGE		0.344 lb/M lb steam	
Pollutant	Date	Result (lb/M lb Steam)	
VOC	2/13/1998	0.01	
VOC	2/23/2000	0.01	
VOC	9/6/2001	0.01	as propane
VOC	8/29/2002	0	
VOC	9/1/1992	0.13	
VOC	8/31/1992	0.03	
AVERAGE		0.031 lb/M lb steam	

<b>Rosboro Vaughn</b>				
<b>Permit No. 200550</b>				
<b>PM2.5 Netting Basis (NB)</b>				
	"Required" PM2.5 PSEL			46
	PM2.5 to PM10 PSEL ratio			0.50
	PM2.5 NB (=PM10 NB x ratio)			38

Rosboro Vaughn  
 Permit No. 200550  
 GHG Estimations "Capacity"

### Calculating greenhouse gas emissions from steam production

**Equation C-2c\*:**  $\text{CO}_2 = .001 * \text{Steam} * B * EF$

**Equation C-9b\*:**  $\text{CH}_4 \text{ or } \text{N}_2\text{O} = .001 * \text{Steam} * B * EF$

\* Equations are from EPA's Mandatory Greenhouse Gas Reporting Rule, 40 CFR Part 98, Subpart C

Total CO <sub>2</sub> e (short tons):	32,036.85
Anthropogenic CO <sub>2</sub> e (short tons):	422.25
Biogenic CO <sub>2</sub> (short tons):	31,614.61

Total fuel combusted (mmBtu)	305,760
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#### Input Data

[Steam] = Total mass of steam generated by MSW or solid fuel combustion during the reporting year (lb steam)	305,760,000.
[B] = Ratio of the boiler's maximum rated heat input capacity to its design rated steam output capacity (mmBtu/lb steam)	0.001
[.001] = Conversion Factor from kg to metric tons (constant)	0.001
[EF] = Fuel-Specific Default CO <sub>2</sub> Emission Factor, from Table C-1 (kg CO <sub>2</sub> /mmBtu)	93.8
[EF] = Fuel-Specific Default CH <sub>4</sub> Emission Factor, from Table C-2 (kg CH <sub>4</sub> /mmBtu)	0.0072
[EF] = Fuel-Specific Default N <sub>2</sub> O Emission Factor, from Table C-2 (kg N <sub>2</sub> O/mmBtu)	0.0036
Is the fuel biomass?	yes

See "Table C-1" tab. Note:  
 Wood/Woodwaste = 93.8 kg/mmBtu

See "Table C-2" tab. Note:  
 Wood/Woodwaste = .0072 kg/mmBtu

See "Table C-2" tab. Note:  
 Wood/Woodwaste = .0036 kg/mmBtu

#### Emissions by mass (short tons)

CO <sub>2</sub> Emissions For the Specific Fuel Type (short tons) from Equation C-2c	31614.61
CH <sub>4</sub> Emissions For the Specific Fuel Type (short tons) from Equation C-9b	2.43
N <sub>2</sub> O Emissions For the Specific Fuel Type (short tons) from Equation C-9b	1.21

#### CH<sub>4</sub> Emissions Converted to Carbon Dioxide Equivalent (short tons CO<sub>2</sub>e)

Global Warming Potential for CH <sub>4</sub>	25
Annual CH <sub>4</sub> emissions from combustion of the specified fuel (metric tons CO <sub>2</sub> e)	60.67

#### N<sub>2</sub>O Emissions Converted to Carbon Dioxide Equivalent (short tons CO<sub>2</sub>e)

Global Warming Potential for N <sub>2</sub> O	298
Annual N <sub>2</sub> O emissions from combustion of the specified fuel (metric tons CO <sub>2</sub> e)	361.58