Table 1
Input Assumptions and Parameters
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Number of Operational Positions [1]		Throughput							
			2021				PTE			
	Daily	Annual	Daily		Annual		Daily		Annual	
FACILITY WIDE OPERATION										
Hours of Operation	--	--	24.0	(hrs/day) [2]	8,760	(hrs/yr) [2]	24.0	(hrs/day) [3]	8,760	(hrs/yr) [3]
NATURAL GAS USAGE										
Glass Plant Natural Gas Usage	--	--	2.48	(MMscf/day) [a]	391	(MMscf/yr) [2]	2.79	(MMscf/day) [3]	1,020	(MMscf/yr) [3]
Forehearth Natural Gas Usage	--	--	0.11	(MMscf/day) [5]	15.3	(MMscf/yr) [b]	0.11	(MMscf/day) [c]	38.4	(MMscf/yr) [3]
Glass Plant Natural Gas Usage - Excluding Forehearth	--	--	2.37	(MMscf/day) [d]	376	(MMscf/yr) [d]	2.68	(MMscf/day) [d]	982	(MMscf/yr) [d]
Non-Production Natural Gas Usage	--	--	0.062	(MMscf/day) [e]	9.77	(MMscf/yr) [2]	0.070	(MMscf/day) [e]	25.5	(MMscf/yr) [e]
GLASS PLANT PRODUCTION										
Actual Annual Production										
Rotary Fine Fiber Production	--	--	5.70	(tons/day) [6]	1,199	(tons/yr) [2]	--		--	
Rotary Coarse and Ultra Rotary Coarse Fiber Production	--	--	47.7	(tons/day) [5]	6,006	(tons/yr) [2]	--		--	
Flameblown Production	--	--	2.16	(tons/day) [5]	594	(tons/yr) [2]	--		--	
Glass Melt Throughput	--	--	64.8	(tons/day) [5]	8,078	(tons/yr) [2]	--		--	
PTE Production Scenario 1										
Rotary Fine Fiber Production	30	30	--		--		21.4	(tons/day) [f]	7,805	(tons/yr) [f]
Rotary Coarse Fiber Production	0	0	--		--		0	(tons/day) [f]	0	(tons/yr) [f]
Ultra Rotary Coarse Fiber Production	0	0	--		--		0	(tons/day) [f]	0	(tons/yr) [f]
Flameblown Production	4	4	--		--		2.16	(tons/day) [f]	788	(tons/yr) [f]
Glass Melt Throughput	--	--	--		--		64.8	(tons/day) [3]	23,652	(tons/yr) [3]
PTE Production Scenario 2										
Rotary Fine Fiber Production	0	0	--		--		0	(tons/day) [f]	0	(tons/yr) [f]
Rotary Coarse Fiber Production	30	30	--		--		79.6	(tons/day) [f]	29,039	(tons/yr) [f]
Ultra Rotary Coarse Fiber Production	0	0	--		--		0	(tons/day) [f]	0	(tons/yr) [f]
Flameblown Production	4	4	--		--		2.16	(tons/day) [f]	788	(tons/yr) [f]
Glass Melt Throughput	--	--	--		--		64.8	(tons/day) [3]	23,652	(tons/yr) [3]
BULKING AGENT STORAGE SILOS										
Glass Plant 1 Silo Filling Hours of Operation	--	--	1.50	(hrs/day) [2]	52.0	(hrs/yr) [7]	1.50	(hrs/day) [3]	200	(hrs/yr) [3]
Glass Plant 2 Silo Filling Hours of Operation	--	--	1.50	(hrs/day) [2]	65.0	(hrs/yr) [7]	1.50	(hrs/day) [3]	200	(hrs/yr) [3]
CFU WASTE COLLECTION										
CFU Waste Generation	--	--	12.0	(tons/day) [8]	3,111	(tons/yr) [2]	29.6	(tons/day) [10]	5,000	(tons/yr) [2]
RAW MATERIAL HANDLING										
Off Specification Throughput	--	--	1.00	(tons/day) [2]	12.0	(tons/yr) [9]	1.00	(tons/day) [2]	12.0	(tons/yr) [9]
Barium Carbonate Usage	--	--	0.84	(tons/day) [g]	257	(tons/yr) [2]	4.80	(tons/day) [g]	1,459	(tons/yr) [12]
Zinc Oxide Usage	--	--	0.53	(tons/day) [g]	162	(tons/yr) [2]	3.02	(tons/day) [g]	919	(tons/yr) [12]

Table 1
Input Assumptions and Parameters
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Number of Operational Positions [1]		Throughput							
			2021				PTE			
	Daily	Annual	Daily		Annual		Daily		Annual	
RAW MATERIAL HANDLING cont.										
Fluorspar Usage	--	--								
Sand Usage	--	--								
Dolomite Usage	--	--								
Limestone Usage	--	--								
Nepheline Syenite Usage	--	--								
SHIPPING AND RECEIVING PAINT USAGE										
Spray Paint Usage	--	--	1.00	(lb/day) [2]	342	(lb/yr) [2]	3.00	(lb/day) [13]	936	(lb/yr) [13]
EMERGENCY GENERATORS										
Emergency Generator 1										
Hours of Operation	--	--	2.00	(hrs/day) [2]	7.00	(hrs/yr) [2]	2.00	(hrs/day) [3]	100	(hrs/yr) [14]
Diesel Usage	--	--	46.8	(gal/day) [h]	164	(gal/yr) [h]	46.8	(gal/day) [h]	2,340	(gal/yr) [h]
Emergency Generator 2										
Hours of Operation	--	--	2.00	(hrs/day) [2]	8.00	(hrs/yr) [2]	2.00	(hrs/day) [3]	100	(hrs/yr) [14]
Diesel Usage	--	--	33.0	(gal/day) [h]	132	(gal/yr) [h]	33.0	(gal/day) [h]	1,650	(gal/yr) [h]
COOLING TOWERS										
Hours of Operation	--	--	24.0	(hrs/day) [2]	8,760	(hrs/yr) [2]	24.0	(hrs/day) [2]	8,760	(hrs/yr) [2]
Shock Biocide Usage	--	--	17.0	(lb/day) [16]	310	(lb/yr) [2]	--	[17]	--	[17]

NOTES:

CFU = ceramic filtration unit.

MMBtu = million British thermal units.

MMscf = million standard cubic feet.

PTE = potential to emit.

(a) 2021 daily parameter ('unit'/day) = (PTE daily parameter ['unit'/day]) - (Line 3 PTE daily parameter ['unit'/day]); see Reference (4).

Line 3 PTE natural gas usage (MMscf/day) = 0.31 (3)

(b) 2021 annual forehearth natural gas usage (MMscf/yr) = (2021 annual glass plant natural gas usage [MMscf/yr]) x (PTE annual forehearth natural gas usage [MMscf/yr]) / (PTE annual glass plant natural gas usage - excluding forehearth [MMscf/yr])

(c) Daily natural gas usage (MMscf/day) = (annual natural gas usage [MMscf/yr]) x (daily hours of operation [hrs/day]) / (annual hours of operation [hrs/yr])

(d) Glass plant natural gas usage - excluding forehearth (MMscf/"period") = (glass plant natural gas usage [MMscf/"period"]) - (forehearth natural gas usage [MMscf/"period"])

(e) Non-production natural gas usage (MMscf/"period") = (glass plant natural gas usage [MMscf/"period"]) x (2021 annual non-production natural gas usage [MMscf/yr]) / (2021 annual glass plant natural gas usage [MMscf/yr])

Table 1
Input Assumptions and Parameters
Hollingsworth & Vose Fiber Company—Corvallis, OR

(f)	Production rate (tons/"unit") = (production rate per-position [lb/hr/position]) x (number of operational positions) x (hours operation [hrs/"unit"]) x (ton/2,000 lb)		
	Production rate per-position—Rotary Fine (lb/hr/position) =	59.4	(2)
	Production rate per-position—Rotary Coarse (lb/hr/position) =	221	(2)
	Production rate per-position—Ultra Rotary Coarse (lb/hr/position) =	420	(2)
	Production rate per-position—Flameblown (lb/hr/position) =	45.0	(2)
(g)	Daily parameter ("unit"/day) = (annual parameter ["unit"/yr]) x (daily hours of operation [hrs/day]) / (annual hours of operation [hrs/yr]) x (short-term variability factor)		
	Short-term variability factor =	1.20	(11)
(h)	Diesel fuel usage (gal/"unit") = (diesel fuel usage [gal/hr]) x (hours of operation [hrs/"unit"])		
	Emergency generator 1 diesel fuel usage (gal/hr) =	23.4	(15)
	Emergency generator 2 diesel fuel usage (gal/hr) =	16.5	(15)

REFERENCES:

(1) For the PTE basis, two production scenarios have been developed to determine the highest potential risk in all risk categories. Neither of the proposed production scenarios reflect realistic production at the facility and cannot be achieved in practice. H&V is accepting these assumptions only to address any questions about the maximum risk posed by this facility under any scenario.
(2) Information provided by Hollingsworth & Vose Fiber Company.
(3) See Oregon Department of Environmental Quality Standard Air Contamination Discharge Permit No. 02-2173-ST-01 issued November 23, 2022.
(4) Conservatively assumes PTE input excluding Line 3 production for maximum daily as 2021 actual daily parameter is unavailable. Contribution of Glass Plant 1, Production Line 3 is subtracted as Line 3 was not operated in 2021.
(5) Conservatively assumes maximum daily production based on actual configuration as actual daily parameter is unavailable.
(6) Conservative production assumption for maximum daily as 2021 actual daily parameter is unavailable. Contribution of Glass Plant 1, Production Line 3 is excluded as Line 3 was not operated in 2021.
(7) Estimate based on 2021 bulking agent purchase records.
(8) Information provided by Hollingsworth & Vose Fiber Company. Daily estimate based on maximum average daily value from monthly data.
(9) Estimate based on typical production activities.
(10) Information provided by Hollingsworth & Vose Fiber Company. Daily estimate incorporates short-term variability.
(11) Factor of 1.2 applied to average daily parameters to account for short-term variability in production.
(12) Information provided by Hollingsworth & Vose Fiber Company. PTE estimate represents maximum annual usage across multiple production scenarios. Maximum usage of every raw material would not occur under same production scenario. Total annual raw material usage is limited by production capacity and was presented in PSD permit.
(13) PTE estimate based on 2021 usage and scaled based on total production.
(14) 40 CFR §63.6640(f)(2), any operation for non-emergency situations are limited to 100 hours per year.
(15) Information provided by vendor.
(16) Product used once monthly for system "shock". Only one cooling tower is dosed per day and product usage varies between cooling towers. Represents maximum usage cooling tower.
(17) Current products used Hollingsworth & Vose Fiber Company do not contain any regulated toxic air contaminants.

Table 2
Input Assumptions and Parameters - Cooling Towers
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	(Units)	Value
Annual Days of Operation [1]	--	365
Drift Loss of Circulating Water [2]	(%)	0.005
Density of Water	(lb/gal)	8.34
COOLING TOWER CHEMICALS		
Phosphoric Acid Concentration [a]	(ppm)	7.20
Sulfuric Acid Concentration [a]	(ppm)	7.20
PRODUCTION LINE 1 AND 2		
Number of Cells [1]	--	1
Total Water Circulation Rate [1]	(gpm)	900
PRODUCTION LINE 3		
Number of Cells [1]	--	2
Total Water Circulation Rate [1]	(gpm)	1,000
PRODUCTION LINE 4		
Number of Cells [1]	--	1
Total Water Circulation Rate [1]	(gpm)	800

NOTES:

gpm = gallons per minute.

ppm = parts per million.

TAC = toxic air contaminant.

(a) TAC concentration (ppm) = (corrosion inhibitor dosage [ppm]) x (weight percentage of TAC [%]) / 100

Corrosion inhibitor dosage (ppm) =	240	(3)
Weight percentage of phosphoric acid (%) =	3.00	(4)
Weight percentage of sulfuric acid (%) =	3.00	(4)

REFERENCES:

(1) Information provided by Hollingsworth & Vose Fiber Company.

(2) Information provided by manufacturer.

(3) Information provided by vendor. Average of dosage range.

(4) Composition information from vendor SDS.

Table 3
Emission Factor Summary for Toxic Air Contaminants
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS/ODEQ Sequence Number	CFU Outlet					
		Emission Factor (lb/ton)					
		Rotary Fine	Rotary Coarse and Ultra Rotary Coarse			Flameblown	Glass Melt
			Rotary Coarse	Ultra Rotary Coarse	Maximum (1)		
METALS							
Antimony	7440-36-0	ND 0 (2)	ND 0 (2)	5.39E-05 (3)	5.39E-05	3.24E-04 (3)	3.55E-06 (3)
Arsenic	7440-38-2	ND 0 (2)	ND 0 (2)	ND 0 (2)	0	ND 0 (2)	ND 0 (2)
Barium	7440-39-3	5.21E-05 (3)	3.32E-05 (3)	2.27E-05 (3)	3.32E-05	2.16E-04 (3)	2.47E-06 (3)
Beryllium	7440-41-7	ND 0 (2)	ND 0 (2)	ND 0 (2)	0	ND 0 (2)	ND 0 (2)
Cadmium	7440-43-9	ND 0 (2)	3.44E-05 (3)	2.12E-06 (3)	3.44E-05	5.98E-05 (3)	2.96E-06 (3)
Chromium (total)	7440-47-3	1.82E-05 (3)	3.20E-05 (3)	1.34E-05 (3)	3.20E-05	6.95E-05 (3)	1.27E-06 (3)
Chromium VI	18540-29-9	1.82E-05 (4)	3.20E-05 (4)	1.34E-05 (4)	3.20E-05	6.95E-05 (4)	1.27E-06 (4)
Cobalt	7440-48-4	ND 0 (2)	ND 0 (2)	1.40E-06 (3)	1.40E-06	ND 0 (2)	5.35E-07 (3)
Copper	7440-50-8	4.39E-04 (3)	1.90E-04 (3)	1.83E-04 (3)	1.90E-04	9.90E-04 (3)	1.93E-05 (3)
Lead	7439-92-1	ND 0 (2)	3.03E-04 (3)	ND 0 (2)	3.03E-04	ND 0 (2)	2.64E-05 (3)
Manganese	7439-96-5	8.69E-05 (3)	2.91E-05 (3)	4.81E-05 (3)	4.81E-05	2.26E-04 (3)	7.05E-07 (3)
Mercury	7439-97-6	4.52E-06 (3)	1.91E-06 (3)	3.66E-06 (3)	3.66E-06	1.13E-05 (3)	3.59E-04 (3)
Nickel	7440-02-0	3.87E-05 (3)	7.27E-05 (3)	ND 0 (2)	7.27E-05	3.74E-04 (3)	ND 0 (2)
Phosphorus	504	7.25E-04 (3)	8.61E-04 (3)	6.48E-05 (3)	8.61E-04	1.85E-03 (3)	7.69E-05 (3)
Selenium	7782-49-2	ND 0 (2)	ND 0 (2)	ND 0 (2)	0	ND 0 (2)	ND 0 (2)
Zinc	7440-66-6	1.08E-03 (3)	5.39E-04 (3)	3.41E-04 (3)	5.39E-04	5.96E-03 (3)	4.05E-05 (3)
INORGANIC COMPOUNDS							
Carbon disulfide	75-15-0	--	--	--	--	--	3.82E-05 (10)
Total Fluoride	--	0.0225 (5)	0.0069 (5)	0.0027 (5)	0.0069	0.052 (5)	0.000158 (5)
Hydrogen fluoride	7664-39-3	0.03275 (5)	0.000717 (5)	0.0002285 (5)	0.000717	0.0484 (5)	0.0000201 (5)
Fluorides	239	0 (a)	6.2E-03 (a)	2.5E-03 (a)	6.2E-03	3.6E-03 (a)	1.4E-04 (a)
Glasswool fibers	352	5.10E-03 (b)	1.80E-03 (b)	6.00E-04 (b)	1.8E-03	1.04E-02 (b)	--
ORGANIC COMPOUNDS							
Acetone	67-64-1	0.0497 (10)	0.0124 (10)	0.0192 (10)	0.0192	0.431 (10)	5.48E-03 (10)
Benzene	71-43-2	9.88E-03 (10)	1.10E-03 (10)	4.24E-03 (10)	4.24E-03	0.108 (10)	1.31E-03 (10)
1,3-Butadiene	106-99-0	--	--	2.21E-04 (10)	2.21E-04	--	5.79E-04 (10)
Cyclohexane	110-82-7	--	--	--	--	6.65E-03 (10)	--
Ethyl benzene	100-41-4	--	8.85E-04 (10)	4.63E-04 (10)	8.85E-04	5.66E-03 (10)	--
Chloroethane	75-00-3	--	--	--	--	3.05E-03 (10)	--
Formaldehyde	50-00-0	0.780 (3)	6.50E-02 (3)	2.55E-02 (3)	6.50E-02	0.465 (3)	2.90E-03 (3)
Hexane	110-54-3	0.0486 (10)	2.00E-03 (10)	0.0164 (10)	0.0164	0.625 (10)	7.89E-04 (10)
Chloromethane	74-87-3	3.84E-03 (10)	--	--	--	0.0408 (10)	--
2-Butanone	78-93-3	1.88E-03 (10)	5.71E-04 (10)	7.83E-04 (10)	7.83E-04	0.0137 (10)	7.24E-05 (10)
Methyl isobutyl ketone	108-10-1	--	--	--	--	4.99E-03 (10)	--
Toluene	108-88-3	2.34E-02 (10)	5.14E-03 (10)	1.26E-02 (10)	1.26E-02	0.109 (10)	3.28E-04 (10)
m,p-Xylene	1330-20-7	--	2.10E-03 (10)	--	2.10E-03	0.0117 (10)	--
o-Xylene	95-47-6	--	9.96E-04 (10)	--	9.96E-04	--	--

NOTES:

CFU = ceramic filtration unit.

HAP = hazardous air pollutant

ND = non-detect.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Fluorides emission factor (lb/ton) = (total fluoride emission factor [lb/ton]) - (hydrogen fluoride emission factor [lb/ton]); see Reference (6).

(b) Glasswool emission factor (lb/ton) = (CFU filterable PM emission factor [lb/ton]) x (glasswool fiber percent of filterable PM [%])/100)

Rotary fine CFU filterable PM emission factor (lb/ton) =	0.51	(8)
Rotary coarse CFU filterable PM emission factor (lb/ton) =	0.18	(8)
Ultra rotary coarse CFU filterable PM emission factor (lb/ton) =	0.060	(8)
Flameblown CFU filterable PM emission factor (lb/ton) =	1.04	(8)
Glasswool fiber percent of filterable PM (%) =	1.00	(9)

REFERENCES:

(1) The maximum of emission factor of either rotary coarse and ultra rotary coarse will be used for emissions estimates.

(2) Results of all source tests runs were below the minimum detection limit. The pollutant assumed not to be present in a measurable quantity.

(3) Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(4) Conservatively assumes 100 percent of chromium emissions are hexavalent chromium.

(5) Summary of 2018 source tests provided by DEQ with draft PSD permit (June 2020). Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(6) Represents emission factor for total fluorides minus hydrogen fluoride. If difference is less than zero, shown as zero.

(7) Emission Factor from 2016 PSD application submitted by Hollingsworth & Vose Fiber Company.

(8) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(9) Results of 2022 microscopy analysis indicate that total glass content of CFU emissions is less than 1 percent. Conservatively assume 1 percent of filterable particulate matter as glasswool fiber.

(10) Emission Factor from 2022 source test conducted by Bison Engineering.

Table 4
Glass Plant TAC Emission Estimates - PTE Scenario 1
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse [1]	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Throughput (tons/day)	[2]	21.4	0	0	2.16	64.8
Annual Throughput (tons/yr)	[2]	7,805	0	0	788	23,652

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor [2] (lb/ton)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS																					
Antimony	7440-36-0	Yes	Yes	Yes	0	0	5.4E-05	3.2E-04	3.6E-06	--	--	--	--	--	--	7.0E-04	0.26	2.3E-04	0.084	9.3E-04	0.34
Arsenic	7440-38-2	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	5.2E-05	3.3E-05	2.3E-05	2.2E-04	2.5E-06	1.1E-03	0.41	--	--	--	--	4.7E-04	0.17	1.6E-04	0.058	1.7E-03	0.64
Beryllium	7440-41-7	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	0	3.4E-05	2.1E-06	6.0E-05	3.0E-06	--	--	--	--	--	--	1.3E-04	0.047	1.9E-04	0.070	3.2E-04	0.12
Chromium (total)	7440-47-3	No	Yes	No	1.8E-05	3.2E-05	1.3E-05	7.0E-05	1.3E-06	3.9E-04	0.14	--	--	--	--	1.5E-04	0.055	8.2E-05	0.030	6.2E-04	0.23
Chromium VI	18540-29-9	Yes	Yes	Yes	1.8E-05	3.2E-05	1.3E-05	7.0E-05	1.3E-06	3.9E-04	0.14	--	--	--	--	1.5E-04	0.055	8.2E-05	0.030	6.2E-04	0.23
Cobalt	7440-48-4	Yes	Yes	Yes	0	0	1.4E-06	0	5.4E-07	--	--	--	--	--	--	--	--	3.5E-05	0.013	3.5E-05	0.013
Copper	7440-50-8	Yes	No	Yes	4.4E-04	1.9E-04	1.8E-04	9.9E-04	1.9E-05	9.4E-03	3.43	--	--	--	--	2.1E-03	0.78	1.3E-03	0.46	0.013	4.66
Lead	7439-92-1	Yes	Yes	Yes	0	3.0E-04	0	0	2.6E-05	--	--	--	--	--	--	--	--	1.7E-03	0.62	1.7E-03	0.62
Manganese	7439-96-5	Yes	Yes	Yes	8.7E-05	2.9E-05	4.8E-05	2.3E-04	7.1E-07	1.9E-03	0.68	--	--	--	--	4.9E-04	0.18	4.6E-05	0.017	2.4E-03	0.87
Mercury	7439-97-6	Yes	Yes	Yes	4.5E-06	1.9E-06	3.7E-06	1.1E-05	3.6E-04	9.7E-05	0.035	--	--	--	--	2.4E-05	8.9E-03	0.023	8.49	0.023	8.54
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-05	7.3E-05	0	3.7E-04	0	8.3E-04	0.30	--	--	--	--	8.1E-04	0.29	--	--	1.6E-03	0.60
Phosphorus	504	Yes	Yes	No	7.3E-04	8.6E-04	6.5E-05	1.9E-03	7.7E-05	0.016	5.66	--	--	--	--	4.0E-03	1.46	5.0E-03	1.82	0.024	8.94
Selenium	7782-49-2	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	1.1E-03	5.4E-04	3.4E-04	6.0E-03	4.1E-05	0.023	8.43	--	--	--	--	0.013	4.70	2.6E-03	0.96	0.039	14.1
INORGANIC COMPOUNDS																					
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	3.82E-05	--	--	--	--	--	--	--	--	2.48E-03	0.90	2.48E-03	0.90
Fluorides	239	Yes	No	Yes	0	6.2E-03	2.5E-03	3.6E-03	1.4E-04	--	--	--	--	--	--	7.8E-03	2.84	8.9E-03	3.26	0.017	6.10
Hydrogen fluoride	7664-39-3	Yes	Yes	Yes	0.033	7.2E-04	2.3E-04	0.048	2.0E-05	0.70	256	--	--	--	--	0.10	38.1	1.3E-03	0.48	0.81	294
Glasswool fibers	352	Yes	No	No	5.1E-03	1.8E-03	6.0E-04	0.010	--	0.11	39.8	--	--	--	--	0.022	8.20	--	--	0.13	48.0
ORGANIC COMPOUNDS																					
Acetone	67-64-1	Yes	No	Yes	0.0497	0.0124	0.0192	0.431	5.48E-03	1.06	388	--	--	--	--	0.93	340	0.36	130	2.35	857
Benzene	71-43-2	Yes	Yes	Yes	9.88E-03	1.10E-03	4.24E-03	0.108	1.31E-03	0.21	77.1	--	--	--	--	0.23	85.1	0.085	31.0	0.53	193
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	2.21E-04	--	5.79E-04	--	--	--	--	--	--	--	--	0.038	13.7	0.038	13.7
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	6.65E-03	--	--	--	--	--	--	--	0.014	5.24	--	--	0.014	5.24
Ethyl benzene	100-41-4	Yes	Yes	Yes	--	8.85E-04	4.63E-04	5.66E-03	--	--	--	--	--	--	--	0.012	4.46	--	--	0.012	4.46
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	3.05E-03	--	--	--	--	--	--	--	6.6E-03	2.40	--	--	6.6E-03	2.40
Formaldehyde	50-00-0	Yes	Yes	Yes	0.78	0.065	0.026	0.47	2.9E-03	16.7	6,088	--	--	--	--	1.00	366	0.19	68.6	17.9	6,523
Hexane	110-54-3	Yes	Yes	Yes	0.0486	0.0020	0.0164	0.625	7.89E-04	1.04	379	--	--	--	--	1.35	493	0.051	18.7	2.44	890
Chloromethane	74-87-3	Yes	Yes	Yes	3.84E-03	--	--	0.0408	--	0.082	30.0	--	--	--	--	0.088	32.2	--	--	0.17	62.1
2-Butanone	78-93-3	Yes	No	Yes	1.88E-03	5.71E-04	7.83E-04	0.0137	7.24E-05	0.040	14.7	--	--	--	--	0.030	10.8	4.7E-03	1.71	0.074	27.2
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	4.99E-03	--	--	--	--	--	--	--	0.011	3.93	--	--	0.011	3.93
Toluene	108-88-3	Yes	Yes	Yes	0.0234	0.0051	0.0126	0.109	3.28E-04	0.50	183	--	--	--	--	0.24	85.9	0.021	7.76	0.76	276

Table 4
Glass Plant TAC Emission Estimates - PTE Scenario 1
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse [1]	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Throughput (tons/day)	[2]	21.4	0	0	2.16	64.8
Annual Throughput (tons/yr)	[2]	7,805	0	0	788	23,652

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor [2] (lb/ton)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
ORGANIC COMPOUNDS cont.																					
m,p-Xylene	1330-20-7	Yes	Yes	Yes	--	2.10E-03	--	0.0117	--	--	--	--	--	--	--	0.025	9.22	--	--	0.025	9.22
o-Xylene	95-47-6	Yes	Yes	Yes	--	9.96E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

REFERENCES:

(1) Scenario 1 assumes all rotary fiberizers produce Rotary Fine fiber. No production of Rotary Coarse or Ultra Rotary Coarse.

(2) See Table 1, Input Assumptions and Parameters.

(3) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

Table 5
Glass Plant TAC Emission Estimates - PTE Scenario 2
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine [1]	Rotary Coarse	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Throughput (tons/day)	[2]	0	79.6	0	2.16	64.8
Annual Throughput (tons/yr)	[2]	0	29,039	0	788	23,652

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor [2] (lb/ton)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS																					
Antimony	7440-36-0	Yes	Yes	Yes	0	0	5.4E-05	3.2E-04	3.6E-06	--	--	--	--	--	--	7.0E-04	0.26	2.3E-04	0.084	9.3E-04	0.34
Arsenic	7440-38-2	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	5.2E-05	3.3E-05	2.3E-05	2.2E-04	2.5E-06	--	--	2.6E-03	0.96	--	--	4.7E-04	0.17	1.6E-04	0.058	3.3E-03	1.19
Beryllium	7440-41-7	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	0	3.4E-05	2.1E-06	6.0E-05	3.0E-06	--	--	2.7E-03	1.00	--	--	1.3E-04	0.047	1.9E-04	0.070	3.1E-03	1.12
Chromium (total)	7440-47-3	No	Yes	No	1.8E-05	3.2E-05	1.3E-05	7.0E-05	1.3E-06	--	--	2.5E-03	0.93	--	--	1.5E-04	0.055	8.2E-05	0.030	2.8E-03	1.01
Chromium VI	18540-29-9	Yes	Yes	Yes	1.8E-05	3.2E-05	1.3E-05	7.0E-05	1.3E-06	--	--	2.5E-03	0.93	--	--	1.5E-04	0.055	8.2E-05	0.030	2.8E-03	1.01
Cobalt	7440-48-4	Yes	Yes	Yes	0	0	1.4E-06	0	5.4E-07	--	--	--	--	--	--	--	--	3.5E-05	0.013	3.5E-05	0.013
Copper	7440-50-8	Yes	No	Yes	4.4E-04	1.9E-04	1.8E-04	9.9E-04	1.9E-05	--	--	0.015	5.52	--	--	2.1E-03	0.78	1.3E-03	0.46	0.019	6.75
Lead	7439-92-1	Yes	Yes	Yes	0	3.0E-04	0	0	2.6E-05	--	--	0.024	8.80	--	--	--	--	1.7E-03	0.62	0.026	9.42
Manganese	7439-96-5	Yes	Yes	Yes	8.7E-05	2.9E-05	4.8E-05	2.3E-04	7.1E-07	--	--	2.3E-03	0.85	--	--	4.9E-04	0.18	4.6E-05	0.017	2.9E-03	1.04
Mercury	7439-97-6	Yes	Yes	Yes	4.5E-06	1.9E-06	3.7E-06	1.1E-05	3.6E-04	--	--	1.5E-04	0.055	--	--	2.4E-05	8.9E-03	0.023	8.49	0.023	8.56
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-05	7.3E-05	0	3.7E-04	0	--	--	5.8E-03	2.11	--	--	8.1E-04	0.29	--	--	6.6E-03	2.41
Phosphorus	504	Yes	Yes	No	7.3E-04	8.6E-04	6.5E-05	1.9E-03	7.7E-05	--	--	0.069	25.0	--	--	4.0E-03	1.46	5.0E-03	1.82	0.078	28.3
Selenium	7782-49-2	Yes	Yes	Yes	0	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	1.1E-03	5.4E-04	3.4E-04	6.0E-03	4.1E-05	--	--	0.043	15.7	--	--	0.013	4.70	2.6E-03	0.96	0.058	21.3
INORGANIC COMPOUNDS																					
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	3.82E-05	--	--	--	--	--	--	--	--	2.48E-03	0.90	2.48E-03	0.90
Fluorides	239	Yes	No	Yes	0	6.2E-03	2.5E-03	3.6E-03	1.4E-04	--	--	0.49	180	--	--	7.8E-03	2.84	8.9E-03	3.26	0.51	186
Hydrogen fluoride	7664-39-3	Yes	Yes	Yes	0.033	7.2E-04	2.3E-04	0.048	2.0E-05	--	--	0.057	20.8	--	--	0.10	38.1	1.3E-03	0.48	0.16	59.4
Glasswool fibers	352	Yes	No	No	5.1E-03	1.8E-03	6.0E-04	0.010	--	--	--	0.14	52.3	--	--	0.022	8.20	--	--	0.17	60.5
ORGANIC COMPOUNDS																					
Acetone	67-64-1	Yes	No	Yes	0.0497	0.0124	0.0192	0.431	5.48E-03	--	--	0.99	360	--	--	0.93	340	0.36	130	2.27	829
Benzene	71-43-2	Yes	Yes	Yes	9.88E-03	1.10E-03	4.24E-03	0.108	1.31E-03	--	--	0.088	31.9	--	--	0.23	85.1	0.085	31.0	0.41	148
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	2.21E-04	--	5.79E-04	--	--	--	--	--	--	--	--	0.038	13.7	0.038	13.7
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	6.65E-03	--	--	--	--	--	--	--	0.014	5.24	--	--	0.014	5.24
Ethyl benzene	100-41-4	Yes	Yes	Yes	--	8.85E-04	4.63E-04	5.66E-03	--	--	--	0.070	25.7	--	--	0.012	4.46	--	--	0.083	30.2
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	3.05E-03	--	--	--	--	--	--	--	6.6E-03	2.40	--	--	6.6E-03	2.40
Formaldehyde	50-00-0	Yes	Yes	Yes	0.78	0.065	0.026	0.47	2.9E-03	--	--	5.17	1,888	--	--	1.00	366	0.19	68.6	6.37	2,323
Hexane	110-54-3	Yes	Yes	Yes	0.0486	0.0020	0.0164	0.625	7.89E-04	--	--	0.16	58.1	--	--	1.35	493	0.051	18.7	1.56	569
Chloromethane	74-87-3	Yes	Yes	Yes	3.84E-03	--	--	0.0408	--	--	--	--	--	--	--	0.088	32.2	--	--	0.088	32.2
2-Butanone	78-93-3	Yes	No	Yes	1.88E-03	5.71E-04	7.83E-04	0.0137	7.24E-05	--	--	0.045	16.6	--	--	0.030	10.8	4.7E-03	1.71	0.080	29.1
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	4.99E-03	--	--	--	--	--	--	--	0.011	3.93	--	--	0.011	3.93
Toluene	108-88-3	Yes	Yes	Yes	0.0234	0.0051	0.0126	0.109	3.28E-04	--	--	0.41	149	--	--	0.24	85.9	0.021	7.76	0.67	243

Table 5
Glass Plant TAC Emission Estimates - PTE Scenario 2
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine [1]	Rotary Coarse	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Throughput (tons/day)	[2]	0	79.6	0	2.16	64.8
Annual Throughput (tons/yr)	[2]	0	29,039	0	788	23,652

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor [2] (lb/ton)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
ORGANIC COMPOUNDS cont.																					
m,p-Xylene	1330-20-7	Yes	Yes	Yes	--	2.10E-03	--	0.0117	--	--	--	0.17	61.0	--	--	0.025	9.22	--	--	0.19	70.2
o-Xylene	95-47-6	Yes	Yes	Yes	--	9.96E-04	--	--	--	--	--	0.079	28.9	--	--	--	--	--	--	0.079	28.9

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

REFERENCES:

(1) Scenario 2 assumes all rotary fiberizers produce Rotary Coarse fiber. No production of Rotary Fine or Ultra Rotary Coarse.

(2) See Table 1, Input Assumptions and Parameters.

(3) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

Table 6
CFU TAC Emission Estimates - PTE Scenario 1
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse [1]	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Production (tons/day)	[2]	21.4	0	0	2.16	64.8
Annual Production (tons/yr)	[2]	7,805	0	0	788	23,652

TAC	CAS	Regulatory Category (Yes/No)			CFU Emission Factor (lb/ton waste)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Silica, crystalline	7631-86-9	Yes	No	Yes	5.05E-03 [c]	1.78E-03 [c]	5.94E-04 [c]	0.0103 [c]	3.47E-05 [c]	0.11	39.4	--	--	--	--	0.022	8.11	2.2E-03	0.82	0.13	48.3

NOTES:

CFU = ceramic filtration unit.

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

(c) Silica emission factor (lb/ton) = (CFU filterable PM emission factor [lb/ton]) x (bulking agent percent of filterable PM [%])/100) x (bulking agent silica content [%])/100)

Rotary fine CFU filterable PM emission factor (lb/ton) =	0.51	(3)
Rotary coarse CFU filterable PM emission factor (lb/ton) =	0.18	(3)
Ultra rotary coarse CFU filterable PM emission factor (lb/ton) =	0.06	(3)
Flameblown CFU filterable PM emission factor (lb/ton) =	1.04	(3)
Glass melt CFU filterable PM emission factor (lb/ton) =	3.5E-03	(3)
Bulking agent percent of filterable PM (%) =	99.0	(4)
Bulking agent silica content (%) =	1.00	(5)

REFERENCES:

(1) Scenario 1 assumes all rotary fiberizers produce Rotary Fine fiber. No production of Rotary Coarse or Ultra Rotary Coarse.

(2) See Table 1, Input Assumptions and Parameters.

(3) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(4) Conservatively assumes 99 percent of filterable PM is bulking agent.

(5) Composition information from vendor SDS. Average of range.

Table 7
CFU TAC Emission Estimates - PTE Scenario 2
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine [1]	Rotary Coarse	Ultra Rotary Coarse [1]	Flameblown	Glass Melt
Daily Production (tons/day)	[2]	0	79.6	0	2.16	64.8
Annual Production (tons/yr)	[2]	0	29,039	0	788	23,652

TAC	CAS	Regulatory Category (Yes/No)			CFU Emission Factor (lb/ton waste)					Emission Estimates										Total Facility Emission Estimates	
										Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse	Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Silica, crystalline	7631-86-9	Yes	No	Yes	5.05E-03 [c]	1.78E-03 [c]	5.94E-04 [c]	0.0103 [c]	3.47E-05 [c]	--	--	0.14	51.7	--	--	0.022	8.11	2.2E-03	0.82	0.17	60.7

NOTES:

CFU = ceramic filtration unit.

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

(c) Silica emission factor (lb/ton) = (CFU filterable PM emission factor [lb/ton]) x (bulking agent percent of filterable PM [%])/100) x (bulking agent silica content [%])/100)

Rotary fine CFU filterable PM emission factor (lb/ton) =	0.51	(3)
Rotary coarse CFU filterable PM emission factor (lb/ton) =	0.18	(3)
Ultra rotary coarse CFU filterable PM emission factor (lb/ton) =	0.06	(3)
Flameblown CFU filterable PM emission factor (lb/ton) =	1.04	(3)
Glass melt CFU filterable PM emission factor (lb/ton) =	3.5E-03	(3)
Bulking agent percent of filterable PM (%) =	99.0	(4)
Bulking agent silica content (%) =	1.00	(5)

REFERENCES:

(1) Scenario 2 assumes all rotary fiberizers produce Rotary Coarse fiber. No production of Rotary Fine or Ultra Rotary Coarse.

(2) See Table 1, Input Assumptions and Parameters.

(3) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(4) Conservatively assumes 99 percent of filterable PM is bulking agent.

(5) Composition information from vendor SDS. Average of range.

Table 8
CFU Super Sack Filling TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS/ODEQ Sequence Number	Glass Plant CFU Exhaust TAC Emission Factor [1] (lb/ton)				CFU Super Sack Filter TAC Emission Factor (lb/ton)				CFU Super Sack Filter Emission Estimates								Total CFU Super Sack Filter Emission Estimates	
										Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Antimony	7440-36-0	0	5.4E-05	3.2E-04	3.6E-06	-- [c]	1.2E-06 [c]	3.8E-07 [c]	9.6E-07 [c]	--	--	3.6E-05	6.2E-03	1.1E-05	1.9E-03	2.8E-05	4.8E-03	7.6E-05	0.013
Arsenic	7440-38-2	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	5.2E-05	3.3E-05	2.2E-04	2.5E-06	1.2E-07 [c]	7.6E-07 [c]	2.5E-07 [c]	6.7E-07 [c]	3.5E-06	5.8E-04	2.2E-05	3.8E-03	7.5E-06	1.3E-03	2.0E-05	3.3E-03	5.3E-05	9.0E-03
Beryllium	7440-41-7	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	0	3.4E-05	6.0E-05	3.0E-06	-- [c]	7.9E-07 [c]	7.0E-08 [c]	8.0E-07 [c]	--	--	2.3E-05	3.9E-03	2.1E-06	3.5E-04	2.4E-05	4.0E-03	4.9E-05	8.3E-03
Chromium (total)	7440-47-3	1.8E-05	3.2E-05	7.0E-05	1.3E-06	4.1E-08 [c]	7.3E-07 [c]	8.1E-08 [c]	3.4E-07 [c]	1.2E-06	2.0E-04	2.2E-05	3.7E-03	2.4E-06	4.1E-04	1.0E-05	1.7E-03	3.5E-05	6.0E-03
Chromium VI	18540-29-9	1.8E-05	3.2E-05	7.0E-05	1.3E-06	4.1E-08 [c]	7.3E-07 [c]	8.1E-08 [c]	3.4E-07 [c]	1.2E-06	2.0E-04	2.2E-05	3.7E-03	2.4E-06	4.1E-04	1.0E-05	1.7E-03	3.5E-05	6.0E-03
Cobalt	7440-48-4	0	1.4E-06	0	5.4E-07	-- [c]	3.2E-08 [c]	-- [c]	1.5E-07 [c]	--	--	9.5E-07	1.6E-04	--	--	4.3E-06	7.3E-04	5.2E-06	8.9E-04
Copper	7440-50-8	4.4E-04	1.9E-04	9.9E-04	1.9E-05	9.8E-07 [c]	4.3E-06 [c]	1.2E-06 [c]	5.2E-06 [c]	2.9E-05	4.9E-03	1.3E-04	0.022	3.4E-05	5.8E-03	1.5E-04	0.026	3.5E-04	0.059
Lead	7439-92-1	0	3.0E-04	0	2.6E-05	-- [c]	6.9E-06 [c]	-- [c]	7.2E-06 [c]	--	--	2.1E-04	0.035	--	--	2.1E-04	0.036	4.2E-04	0.070
Manganese	7439-96-5	8.7E-05	4.8E-05	2.3E-04	7.1E-07	1.9E-07 [c]	1.1E-06 [c]	2.6E-07 [c]	1.9E-07 [c]	5.8E-06	9.7E-04	3.3E-05	5.5E-03	7.8E-06	1.3E-03	5.7E-06	9.6E-04	5.2E-05	8.7E-03
Mercury	7439-97-6	4.5E-06	3.7E-06	1.1E-05	3.6E-04	1.0E-08 [c]	8.4E-08 [c]	1.3E-08 [c]	9.7E-05 [c]	3.0E-07	5.1E-05	2.5E-06	4.2E-04	3.9E-07	6.6E-05	2.9E-03	0.49	2.9E-03	0.49
Nickel	7440-02-0	3.9E-05	7.3E-05	3.7E-04	0	8.7E-08 [c]	1.7E-06 [c]	4.4E-07 [c]	-- [c]	2.6E-06	4.3E-04	4.9E-05	8.3E-03	1.3E-05	2.2E-03	--	--	6.5E-05	0.011
Phosphorus	504	7.3E-04	8.6E-04	1.9E-03	7.7E-05	1.6E-06 [c]	2.0E-05 [c]	2.2E-06 [c]	2.1E-05 [c]	4.8E-05	8.1E-03	5.8E-04	0.098	6.4E-05	0.011	6.2E-04	0.10	1.3E-03	0.22
Selenium	7782-49-2	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	1.1E-03	5.4E-04	6.0E-03	4.1E-05	2.4E-06 [c]	1.2E-05 [c]	7.0E-06 [c]	1.1E-05 [c]	7.2E-05	0.012	3.6E-04	0.062	2.1E-04	0.035	3.3E-04	0.055	9.7E-04	0.16
Fluorides	239	0	6.2E-03	3.6E-03	1.4E-04	-- [c]	1.4E-04 [c]	4.2E-06 [c]	3.7E-05 [c]	--	--	4.2E-03	0.71	1.2E-04	0.021	1.1E-03	0.19	5.4E-03	0.91
Silica, crystalline	7631-86-9	--	--	--	--	3.2E-05 [d]	3.2E-05 [d]	3.2E-05 [d]	3.2E-05 [d]	9.5E-04	0.16	9.5E-04	0.16	9.5E-04	0.16	9.5E-04	0.16	3.8E-03	0.64

NOTES:

CFU = ceramic filtration unit.

TAC = toxic air contaminant.

(a) Daily CFU super sack filter emission estimate (lb/day) = (super sack filter TAC emission factor [lb/ton]) x (daily waste generation [tons/day])

Daily waste generation (tons/day) = 29.6 (2)

(b) Annual CFU super sack filter emission estimate (lb/yr) = (CFU super sack filter TAC emission factor [lb/ton]) x (annual waste generation [tons/yr])

Annual waste generation (tons/yr) = 5,000 (2)

(c) CFU super sack filter TAC emission factor (lb/ton) = (Glass Plant CFU exhaust TAC emission factor [lb/ton]) / (Glass Plant PM emission factor [lb/ton]) x (CFU super sack filter PM emission factor [lb/ton])

CFU super sack filter PM emission factor (lb/ton) = 3.2E-03 (3)

Rotary fine PM emission factor (lb/ton) = 1.43 (4)

Rotary coarse/ultra rotary coarse PM emission factor (lb/ton) = 0.14 (5)

Flameblown PM emission factor (lb/ton) = 2.73 (4)

Glass melt PM emission factor (lb/ton) = 0.012 (4)

Table 8
CFU Super Sack Filling TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

(d) Emission factor (lb/ton) = (CFU super sack filter PM emission factor [lb/ton]) x (bulking agent silica content [%]) / 100

CFU super sack filter PM emission factor (lb/ton) =	3.2E-03	(3)
Bulking agent silica content (%) =	1.00	(6)

REFERENCES:

(1) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

(2) See Table 1, Input Assumptions and Parameters. Conservatively assign full waste collection to each fiber type.

(3) AP-42 Chapter 11.26 (November 1995), Table 11.26-1 "Emission Factors for Talc Processing." Emission factor for ground talc storage bin loading, with fabric filter. Emission factor used as representative of CFU super sack loading with fabric filter control. Emission factor converted from 0.0016 lb/Mlb to 0.0032 lb/ton.

(4) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(5) Conservatively used the lower of the rotary coarse and ultra rotary coarse results. Value represents the average emission factor for Ultra Rotary Coarse source tests dated September 12 and 15, 2018.

(6) Composition information from vendor SDS. Average of range.

Table 9
Glass Plant Baling Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor [a] (lb/ton)	Emission Estimates	
		TAC	HAP	RBC		Daily [b] (lb/day)	Annual [c] (lb/yr)
Glasswool Fibers	352	Yes	No	No	0.040	3.27	1,193

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Emission factor (lb/ton) = (percentage of fiber airborne) / 100 x (percentage of airborne fiber as fugitive) / 100 x (2,000 lb/ton)

Percentage of fiber airborne (%) = 0.01 (1)

Percentage of airborne fiber as fugitive (%) = 20 (2)

(b) Daily emissions estimate (lb/day) = (emission factor [lb/ton]) x (daily fiber production [tons/day])

Daily fiber production (tons/day) = 81.76 (3)

(c) Annual emissions estimate (lb/yr) = (emission factor [lb/ton]) x (annual fiber production [tons/yr])

Annual fiber production (tons/yr) = 29,827 (3)

REFERENCES:

(1) Assume less than 0.01% of all fiber produced becomes airborne.

(2) Assume 20% of airborne fiber leaves the production building.

(3) See Table 1, Input Assumptions and Parameters. Sum of rotary fine, rotary coarse, ultra rotary coarse, and flameblown fiber production. Conservatively assume sum of Scenario 2 production.

Table 10
Bulking Agent Storage Silos TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter		Glass Plant 1 Silo	Glass Plant 2 Silo
Daily Hours of Operation (hrs/day)	(1)	1.50	1.50
Annual Hours of Operation (hrs/yr)	(1)	200	200
PM_{10} Emission Factor (lb/hr)	(2)	0.0051	0.0051

TAC	CAS	Regulatory Category (Yes/No)			Emissions Estimates				Total Silo Emissions Estimate	
					Glass Plant 1 Silo		Glass Plant 2 Silo			
		TAC	HAP	RBC	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Silica, crystalline	7631-86-9 [4]	Yes	No	Yes	7.7E-05	0.010	7.7E-05	0.010	1.5E-04	0.020

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM_{10} emission factor [lb/hr]) x (daily hours of operation [hrs/day]) x (weight percent [%])/100

Weight percent crystalline silica (%) = 1.00 (3)

(b) Annual emissions estimate (lb/yr) = (PM_{10} emission factor [lb/hr]) x (annual hours of operation [hrs/hr]) x (weight percent [%])/100

Weight percent crystalline silica (%) = 1.00 (3)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) From Draft PSD permit provided by the DEQ in June 2020. Assumes PM_{10} emissions as representative of respirable portion of particulate emissions.

(3) Composition information from vendor SDS. Average of range.

(4) Assigned CAS for Silica, crystalline. Not all crystalline silica in product is of respirable size.

Table 11
Raw Material Handling TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS/ODEQ Sequence Number	ODEQ Sequence Number	Regulatory Category (Yes/No)			Product Usage (1)		Weight Percent (%)	Emissions Estimate	
				TAC	HAP	RBC	Daily (tons/day)	Annual (tons/yr)		Daily (a) (lb/day)	Annual (b) (lb/yr)
Barium Carbonate	Barium	7440-39-3 (3)	45	Yes	No	No	4.80	1,459	97.0 (4)	0.18	53.8
Zinc Oxide	Zinc Oxide	1314-13-2	633	Yes	No	No	3.02	919	97.5 (5)	0.11	34.0
	Lead	7439-92-1 (6)	305	Yes	Yes	Yes			0.10 (7)	1.1E-04	0.035
	Cadmium	7440-43-9 (8)	83	Yes	Yes	Yes			0.010 (7)	1.1E-05	3.5E-03
Fluorspar	Fluorides	239 (9)	239	Yes	No	Yes	[redacted]			0.049	14.8
	Silica, crystalline	7631-86-9	579	Yes	No	Yes				7.4E-04	0.22
Sand	Silica, crystalline	7631-86-9 (11)	579	Yes	No	Yes				1.71	520
	Aluminum	7429-90-5 (12)	13	Yes	No	Yes				5.7E-03	1.73
Dolomite	Silica, crystalline	7631-86-9 (11)	579	Yes	No	Yes				6.8E-03	2.05
Limestone	Silica, crystalline	7631-86-9 (11)	579	Yes	No	Yes				1.1E-04	0.033
Nepheline Syenite	Aluminum	7429-90-5 (12)	13	Yes	No	Yes				0.68	205

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.038 (2)

(b) Annual emissions estimate (lb/yr) = (PM emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.038 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Information provided by Hollingsworth & Vose Fiber Company. See Title V permit application. Represents total PM emissions across raw material locations. Sum of PM emission factors for unloading & conveying, storage, weighing & mixing, and batch mix storage.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Composition information from vendor SDS. Average of range.

(6) Assigned CAS for lead and compounds.

(7) Composition information from vendor SDS. Compound present in trace quantities.

(8) Assigned CAS for cadmium and compounds.

(9) Assigned ODEQ ID for fluorides.

[redacted]

(11) Assigned CAS for Silica, crystalline. Not all crystalline silica in the product is of a respirable size. Conservatively assumes all crystalline silica emitted from baghouse is of respirable size.

(12) Assigned CAS for aluminum and compounds.

[redacted]

Table 12
Raw Material Handling - Off Specification TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Percent of Off Specification Makeup [1] (%)	Off Specification Throughput		Weight Percent (%)	Emissions Estimate	
			TAC	HAP	RBC		Daily [a] (tons/day)	Annual [b] (tons/yr)		Daily (lb/day)	Annual (lb/yr)
Barium Carbonate	Barium	7440-39-3 [3]	Yes	No	No	6.1	0.061	0.73	97.0 [4]	1.2E-04 [c]	1.4E-03 [d]
Zinc Oxide	Zinc Oxide	1314-13-2	Yes	No	No	3.8	0.038	0.46	97.5 [6]	7.4E-05 [c]	8.9E-04 [d]
	Lead	7439-92-1 [7]	Yes	Yes	Yes				0.10 [8]	7.6E-08 [c]	9.1E-07 [d]
	Cadmium	7440-43-9 [9]	Yes	Yes	Yes				0.010 [8]	7.6E-09 [c]	9.1E-08 [d]
Fluorspar	Fluorides	239 [10]	Yes	No	Yes	[redacted]				3.3E-05 [c]	3.9E-04 [d]
	Silica, crystalline	7631-86-9	Yes	No	Yes					4.9E-07 [c]	5.9E-06 [d]
Sand	Silica, crystalline	7631-86-9 [12]	Yes	No	Yes					1.1E-03 [c]	0.014 [d]
	Aluminum	7429-90-5 [13]	Yes	No	Yes					3.8E-06 [c]	4.5E-05 [d]
Dolomite	Silica, crystalline	7631-86-9 [12]	Yes	No	Yes					4.5E-06 [c]	5.4E-05 [d]
Limestone	Silica, crystalline	7631-86-9 [12]	Yes	No	Yes					7.2E-08 [c]	8.6E-07 [d]
Nepheline Syenite	Aluminum	7429-90-5 [13]	Yes	No	Yes					4.5E-04 [c]	5.4E-03 [d]

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily product throughput (tons/day) = (percent of Off Specification makeup [%]) / 100 x (Off Specification daily throughput [tons/day])

Off Specification daily throughput (tons/day) = 1.00 (2)

(b) Annual product throughput (tons/yr) = (percent of Off Specification makeup [%]) / 100 x (Off Specification annual throughput [tons/yr])

Off Specification annual throughput (tons/yr) = 12.0 (2)

(c) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.002 (5)

(d) Annual emissions estimate (lb/yr) = (PM emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.002 (5)

REFERENCES:

(1) Assumes same ratio of raw material usage as presented in Table 1, Input Assumptions and Parameters. Actual batch makeup varies by glass type.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Information provided by Hollingsworth & Vose Fiber Company. See Oregon Department of Environmental Quality Standard Air Contamination Discharge Permit No. 02-2173-ST-01 issued November 23, 2022.

(6) Composition information from vendor SDS. Average of range.

(7) Assigned CAS for lead and compounds.

(8) Composition information from vendor SDS. Compound present in trace quantities.

(9) Assigned CAS for cadmium and compounds.

(10) Assigned ODEQ ID for fluorides.

[redacted]

(12) Assigned CAS for Silica, crystalline. Not all crystalline silica in the product is of a respirable size. Conservatively assumes all crystalline silica emitted from baghouse is of respirable size.

(13) Assigned CAS for aluminum and compounds.

[redacted]

Table 13
Cooling Tower - Circulation Drift - TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Production Line 1 and 2	Production Line 3	Production Line 4
Total Water Circulation Rate (gpm) [1]	900	1,000	800

Pollutant	CAS	Regulatory Category (Yes/No)			Concentration [1] (ppm)	Emission Estimates						Total Facility Emission Estimates	
						Production Line 1 and 2		Production Line 3		Production Line 4			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Drift Loss	--	--	--	--	--	540 [a]	197,258 [b]	600 [a]	219,175 [b]	480 [a]	175,340 [b]	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	7.20	3.9E-03 [c]	1.42 [d]	4.3E-03 [c]	1.58 [d]	3.5E-03 [c]	1.26 [d]	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	7.20	3.9E-03 [c]	1.42 [d]	4.3E-03 [c]	1.58 [d]	3.5E-03 [c]	1.26 [d]	0.012	4.26

NOTES:

gpm = gallons per minute.

HAP = hazardous air pollutant

ppm = parts per million.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily drift loss (lb/day) = (total water circulation rate [gpm]) x (density of water [lb/gal]) x (drift loss percent of circulating water [%] / 100) x (60 min/hr) x (daily hours of operation [hrs/day])

Density of water (lb/gal) =	8.34	(1)
Daily hours of operation (hrs/day) =	24.0	(2)
Drift loss percent of circulating water (%) =	5.0E-03	(1)

(b) Annual drift loss (lb/yr) = (daily drift loss [lb/day]) x (annual days of operation [days/yr])

Annual days of operation (days/yr) =	365	(1)

(c) Daily emissions estimate (lb/day) = (daily drift loss [lb/day]) x (concentration [ppm] / 1,000,000); see Reference (3).

(d) Annual emissions estimate (lb/yr) = (annual drift loss [lb/yr]) x (concentration [ppm] / 1,000,000); see Reference (3).

REFERENCES:

(1) See Table 2, Input Assumptions and Parameters - Cooling Towers.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assumes the composition of the drift loss is same as the cooling tower makeup water.

Table 14
Spray Paint Usage TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS	Regulatory Category (Yes/No)			Weight Percent (%)		Emission Factor (lb/lb)		Usage [3]		Emissions Estimates	
			TAC	HAP	RBC	Maximum [1]	Average [2]	Daily	Annual	Daily (lb/day)	Annual (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Total	Acetone	67-64-1	Yes	No	Yes	36.0	26.2	0.36 [c]	0.26 [d]	3.00	936	1.08	245
	Barium	7440-39-3	Yes	No	No	3.10	2.10	0.023 [e]	0.016 [f]			0.070	14.7
	Cobalt	7440-48-4	Yes	Yes	Yes	0.10	0.10	7.5E-04 [e]	7.5E-04 [f]			2.3E-03	0.70
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.75	1.10	0.018 [c]	0.011 [d]			0.053	10.3
	1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.40	1.40	0.014 [c]	0.014 [d]			0.042	13.1
	Xylenes	1330-20-7	Yes	Yes	Yes	6.25	4.50	0.063 [c]	0.045 [d]			0.19	42.1

Product	TAC	CAS	Regulatory Category (Yes/No)			Weight Percent (%)
			TAC	HAP	RBC	
Black Paint	Acetone	67-64-1	Yes	No	Yes	25.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	4.40 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.00 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Gray Paint	Acetone	67-64-1	Yes	No	Yes	17.5 [7]
	Xylenes	1330-20-7	Yes	Yes	Yes	6.25 [7]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.75 [7]
Purple Paint	Acetone	67-64-1	Yes	No	Yes	26.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	5.00 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.80 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.20 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Blue Paint	Acetone	67-64-1	Yes	No	Yes	27.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	3.50 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	0.90 [5]
Green Paint	Acetone	67-64-1	Yes	No	Yes	25.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	5.10 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.60 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.20 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Orange Paint	Acetone	67-64-1	Yes	No	Yes	27.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	4.20 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	3.10 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.00 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Red Paint	Acetone	67-64-1	Yes	No	Yes	36.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	2.70 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.70 [5]
	1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.40 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	0.60 [5]

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (daily product usage [lb/day]) x (emission factor [lb/lb])

(b) Annual emissions estimate (lb/yr) = (annual product usage [lb/yr]) x (emission factor [lb/lb])

(c) Daily emission factor (lb/lb) = (maximum weight percent [%]) / 100

(d) Annual emission factor (lb/lb) = (average weight percent [%]) / 100

(e) Daily emission factor (lb/lb) = (maximum weight percent [%]) / 100 x (1 - [transfer efficiency {%}]/100)
Transfer efficiency (%) = 25.0 (4)

(f) Annual emission factor (lb/lb) = (average weight percent [%]) / 100 x (1 - [transfer efficiency {%}]/100)
Transfer efficiency (%) = 25.0 (4)

REFERENCES:

(1) Maximum TAC of content of paints used the facility.

(2) Average of content of paints used the facility.

(3) See Table 1, Input Assumptions and Parameters.

(4) AP-42 Chapter 4.2.2.12 (May 1983) Table 4.2.2.12-1 "Coating Method Transfer Efficiencies." Assume transfer efficiency for air atomized spray.

(5) Composition information from vendor SDS.

(6) Assigned CAS for Cobalt and compounds.

(7) Composition information from vendor SDS. Represents average of range.

(8) Assigned CAS for Barium and compounds.

Table 15
Emergency Generator TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter		Emergency Generator 1	Emergency Generator 2
Daily Fuel Consumption (gal/day)	(1)	46.8	33.0
Annual Fuel Consumption (gal/yr)	(1)	2,340	1,650

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/Mgal)	Emissions Estimates				Total Facility Emissions Estimates	
						Emergency Generator 1		Emergency Generator 2			
		TAC	HAP	RBC		Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS											
Arsenic	7440-38-2	Yes	Yes	Yes	1.6E-03 (2)	7.5E-05	3.7E-03	5.3E-05	2.6E-03	1.3E-04	6.4E-03
Cadmium	7440-43-9	Yes	Yes	Yes	1.5E-03 (2)	7.0E-05	3.5E-03	5.0E-05	2.5E-03	1.2E-04	6.0E-03
Chromium VI	18540-29-9	Yes	Yes	Yes	1.0E-04 (2)	4.7E-06	2.3E-04	3.3E-06	1.7E-04	8.0E-06	4.0E-04
Copper	7440-50-8	Yes	No	Yes	4.1E-03 (2)	1.9E-04	9.6E-03	1.4E-04	6.8E-03	3.3E-04	0.016
Lead	7439-92-1	Yes	Yes	Yes	8.3E-03 (2)	3.9E-04	0.019	2.7E-04	0.014	6.6E-04	0.033
Manganese	7439-96-5	Yes	Yes	Yes	3.1E-03 (2)	1.5E-04	7.3E-03	1.0E-04	5.1E-03	2.5E-04	0.012
Mercury	7439-97-6	Yes	Yes	Yes	2.0E-03 (2)	9.4E-05	4.7E-03	6.6E-05	3.3E-03	1.6E-04	8.0E-03
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-03 (2)	1.8E-04	9.1E-03	1.3E-04	6.4E-03	3.1E-04	0.016
Selenium	7782-49-2	Yes	Yes	Yes	2.2E-03 (2)	1.0E-04	5.1E-03	7.3E-05	3.6E-03	1.8E-04	8.8E-03
ORGANIC COMPOUNDS											
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.78 (2)	0.037	1.83	0.026	1.29	0.063	3.13
Acrolein	107-02-8	Yes	Yes	Yes	0.034 (2)	1.6E-03	0.079	1.1E-03	0.056	2.7E-03	0.14
Benzene	71-43-2	Yes	Yes	Yes	0.19 (2)	8.7E-03	0.44	6.1E-03	0.31	0.015	0.74
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.22 (2)	0.010	0.51	7.2E-03	0.36	0.017	0.87
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.011 (2)	5.1E-04	0.026	3.6E-04	0.018	8.7E-04	0.043
Formaldehyde	50-00-0	Yes	Yes	Yes	1.73 (2)	0.081	4.04	0.057	2.85	0.14	6.89
Hexane	110-54-3	Yes	Yes	Yes	0.027 (2)	1.3E-03	0.063	8.9E-04	0.044	2.1E-03	0.11
Toluene	108-88-3	Yes	Yes	Yes	0.11 (2)	4.9E-03	0.25	3.5E-03	0.17	8.4E-03	0.42
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.042 (2)	2.0E-03	0.099	1.4E-03	0.070	3.4E-03	0.17
INORGANIC COMPOUNDS											
Ammonia	7664-41-7	Yes	No	Yes	0.80 (3)	0.037	1.87	0.026	1.32	0.064	3.19
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.19 (2)	8.7E-03	0.44	6.1E-03	0.31	0.015	0.74
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)											
PAHs	401	Yes	Yes	Yes	0.036 (2)	1.7E-03	0.085	1.2E-03	0.060	2.9E-03	0.14
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	3.6E-05 (2)	1.7E-06	8.4E-05	1.2E-06	5.9E-05	2.8E-06	1.4E-04
Naphthalene	91-20-3	Yes	Yes	Yes	0.020 (2)	9.2E-04	0.046	6.5E-04	0.033	1.6E-03	0.079
DIESEL PARTICULATE MATTER (DPM)											
DPM	200	Yes	No	Yes	33.5 (2)	1.57	78.4	1.11	55.3	2.67	134

NOTES:

HAP = hazardous air pollutant

Mgal = thousand gallons.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (daily fuel consumption [gal/day])

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (annual fuel consumption [gal/yr])

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) DEQ approved diesel combustion emission factors for stationary and portable internal combustion engines.

(3) Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory published by the South Coast Air Quality Management District (SCAQMD) in December 2016. See Appendix B, Table B-2 "Default EF for Diesel/Distillate Oil Fuel Combustion (lb/1000 gal)" for stationary and portable internal combustion engines (ICE). Assumes no control.

Table 16
Facility Natural Gas Usage TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Glass Plant - Excluding Forehearth	Forehearth	Non-Production
Daily Fuel Usage (MMscf/day) (1)	2.68	0.11	0.070
Annual Fuel Usage (MMscf/yr) (1)	982	38.4	25.5

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/MMscf)	Emissions Estimates						Total Facility Emissions Estimates	
						Glass Plant - Excluding Forehearth		Forehearth		Non-Production			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS													
Arsenic	7440-38-2	Yes	Yes	Yes	2.0E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.4E-05	5.1E-03	1.4E-05	5.1E-03
Barium	7440-39-3	Yes	No	No	4.4E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	3.1E-04	0.11	3.1E-04	0.11
Beryllium	7440-41-7	Yes	Yes	Yes	1.2E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	8.4E-07	3.1E-04	8.4E-07	3.1E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.1E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	7.7E-05	0.028	7.7E-05	0.028
Chromium (total)	7440-47-3	No	Yes	No	1.4E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	9.8E-05	0.036	9.8E-05	0.036
Chromium VI	18540-29-9	Yes	Yes	Yes	5.6E-05 (c)	-- (2)	-- (2)	-- (3)	-- (3)	3.9E-06	1.4E-03	3.9E-06	1.4E-03
Cobalt	7440-48-4	Yes	Yes	Yes	8.4E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	5.9E-06	2.1E-03	5.9E-06	2.1E-03
Copper	7440-50-8	Yes	No	Yes	8.5E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	5.9E-05	0.022	5.9E-05	0.022
Lead	7439-92-1	Yes	Yes	Yes	5.0E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	3.5E-05	0.013	3.5E-05	0.013
Manganese	7439-96-5	Yes	Yes	Yes	3.8E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	2.6E-05	9.7E-03	2.6E-05	9.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.8E-05	6.6E-03	1.8E-05	6.6E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	1.7E-03 (4)	4.4E-03 (a)	1.62 (b)	1.7E-04 (a)	0.063 (b)	1.2E-04	0.042	4.7E-03	1.73
Nickel	7440-02-0	Yes	Yes	Yes	2.1E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.5E-04	0.054	1.5E-04	0.054
Selenium	7782-49-2	Yes	Yes	Yes	2.4E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.7E-06	6.1E-04	1.7E-06	6.1E-04
Vanadium	7440-62-2	Yes	No	Yes	2.3E-03 (4)	6.2E-03 (a)	2.26 (b)	2.4E-04 (a)	0.088 (b)	1.6E-04	0.059	6.6E-03	2.40
Zinc	7440-66-6	Yes	No	No	0.029 (4)	-- (2)	-- (2)	-- (3)	-- (3)	2.0E-03	0.74	2.0E-03	0.74
INORGANIC COMPOUNDS													
Ammonia	7664-41-7	Yes	No	Yes	3.20 (6)	8.59 (a)	3,141 (b)	0.34 (a)	123 (b)	0.22	81.6	9.15	3,346
ORGANIC COMPOUNDS													
Acetaldehyde	75-07-0	Yes	Yes	Yes	4.3E-03 (4)	0.012 (a)	4.22 (b)	4.5E-04 (a)	0.17 (b)	3.0E-04	0.11	0.012	4.50
Acrolein	107-02-8	Yes	Yes	Yes	2.7E-03 (4)	7.2E-03 (a)	2.65 (b)	2.8E-04 (a)	0.10 (b)	1.9E-04	0.069	7.7E-03	2.82
Benzene	71-43-2	Yes	Yes	Yes	8.0E-03 (4)	-- (2)	-- (2)	8.4E-04 (a)	0.31 (b)	5.6E-04	0.20	1.4E-03	0.51
Ethylbenzene	100-41-4	Yes	Yes	Yes	9.5E-03 (4)	-- (2)	-- (2)	1.0E-03 (a)	0.36 (b)	6.6E-04	0.24	1.7E-03	0.61
Formaldehyde	50-00-0	Yes	Yes	Yes	0.017 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.2E-03	0.43	1.2E-03	0.43
Hexane	110-54-3	Yes	Yes	Yes	6.3E-03 (4)	-- (2)	-- (2)	6.6E-04 (a)	0.24 (b)	4.4E-04	0.16	1.1E-03	0.40
Toluene	108-88-3	Yes	Yes	Yes	0.037 (4)	-- (2)	-- (2)	3.9E-03 (a)	1.41 (b)	2.6E-03	0.93	6.4E-03	2.34
Xylenes	1330-20-7	Yes	Yes	Yes	0.027 (4)	-- (2)	-- (2)	2.9E-03 (a)	1.04 (b)	1.9E-03	0.69	4.8E-03	1.74
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)													
PAHs	401	Yes	Yes	Yes	1.0E-04 (4)	2.7E-04 (a)	0.098 (b)	1.1E-05 (a)	3.8E-03 (b)	7.0E-06	2.5E-03	2.9E-04	0.10
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.2E-06 (4)	3.2E-06 (a)	1.2E-03 (b)	1.3E-07 (a)	4.6E-05 (b)	8.4E-08	3.1E-05	3.4E-06	1.3E-03
Naphthalene	91-20-3	Yes	Yes	Yes	3.0E-04 (4)	8.1E-04 (a)	0.29 (b)	3.2E-05 (a)	0.012 (b)	2.1E-05	7.6E-03	8.6E-04	0.31

NOTES:

HAP = hazardous air pollutant

MMscf = million standard cubic feet.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emission estimates (lb/day) = (emission factor [lb/MMscf]) x (daily fuel usage [MMscf/day])

(b) Annual emission estimates (lb/yr) = (emission factor [lb/MMscf]) x (annual fuel usage [MMscf/yr])

(c) Chromium VI emission factor (lb/MMscf) = (chromium emission factor [lb/MMscf]) x (chromium VI percentage of total chromium [%]) /100

Chromium VI percentage of total chromium (%) = 4.00 (5)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Source-specific emissions calculated in Table 4, Glass Plant TAC Emission Estimates - PTE Scenario 1. Emissions of this pollutant are included with the emission estimates for the production-based TEU emission fc

(3) Source-specific emissions calculated in Table 4, Glass Plant TAC Emission Estimates - PTE Scenario 1. Emissions of this pollutant are included with the emission estimates for the glass melt TEU emission factors.

(4) Emission factors provided by Oregon Department of Environmental Quality for Natural Gas External Combustion Sources. Emission factors for sources <10 MMBtu/hr were used.

(5) Based on assumptions used by the EPA as outlined in the 2011 National Emissions Inventory. EPA assumes that 4% of chromium emitted during natural gas combustion is in the form of hexavalent chromium.

(6) EPA Webfire Clearinghouse for Inventories and Emission Factors. Assumes uncontrolled natural gas combustion.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					Production Scenario 1									
					Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown		Glass Melt Operations	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS														
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	7.0E-04	0.26	2.3E-04	0.084
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	1.1E-03	0.41	--	--	--	--	4.7E-04	0.17	1.6E-04	0.058
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	--	--	--	--	1.3E-04	0.047	1.9E-04	0.070
Chromium (total)	7440-47-3	No	Yes	No	3.9E-04	0.14	--	--	--	--	1.5E-04	0.055	8.2E-05	0.030
Chromium VI	18540-29-9	Yes	Yes	Yes	3.9E-04	0.14	--	--	--	--	1.5E-04	0.055	8.2E-05	0.030
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	3.5E-05	0.013
Copper	7440-50-8	Yes	No	Yes	9.4E-03	3.43	--	--	--	--	2.1E-03	0.78	1.3E-03	0.46
Lead	7439-92-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.7E-03	0.62
Manganese	7439-96-5	Yes	Yes	Yes	1.9E-03	0.68	--	--	--	--	4.9E-04	0.18	4.6E-05	0.017
Mercury	7439-97-6	Yes	Yes	Yes	9.7E-05	0.035	--	--	--	--	2.4E-05	8.9E-03	0.023	8.49
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	8.3E-04	0.30	--	--	--	--	8.1E-04	0.29	--	--
Phosphorus	504	Yes	Yes	No	0.016	5.66	--	--	--	--	4.0E-03	1.46	5.0E-03	1.82
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	0.023	8.43	--	--	--	--	0.013	4.70	2.6E-03	0.96
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--
INORGANIC COMPOUNDS														
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.5E-03	0.90
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	7.8E-03	2.84	8.9E-03	3.26
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.70	256	--	--	--	--	0.10	38.1	1.3E-03	0.48
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	0.11	39.8	--	--	--	--	0.022	8.20	--	--
Silica, Crystalline	7631-86-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
ORGANIC COMPOUNDS														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	1.06	388	--	--	--	--	0.93	340	0.36	130
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	0.21	77.1	--	--	--	--	0.23	85.1	0.085	31.0
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.038	13.7
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	0.014	5.24	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	0.012	4.46	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	6.6E-03	2.40	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	16.7	6,088	--	--	--	--	1.00	366	0.19	68.6
Hexane	110-54-3	Yes	Yes	Yes	1.04	379	--	--	--	--	1.35	493	0.051	18.7
Chloromethane	74-87-3	Yes	Yes	Yes	0.082	30.0	--	--	--	--	0.088	32.2	--	--
2-Butanone	78-93-3	Yes	No	Yes	0.040	14.7	--	--	--	--	0.030	10.8	4.7E-03	1.71
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	0.011	3.93	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	0.50	183	--	--	--	--	0.24	85.9	0.021	7.76
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	0.025	9.22	--	--
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Total TACs					**20.5**	**7,474**	**0**	**0**	**0**	**0**	**4.10**	**1,495**	**0.79**	**288**
Total HAPs					**19.2**	**7,020**	**0**	**0**	**0**	**0**	**3.08**	**1,123**	**0.42**	**152**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					Production Scenario 1		Production Scenario 2							
					CFUs		Rotary Fine		Rotary Coarse		Ultra Rotary Coarse		Flameblown	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS														
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	7.0E-04	0.26
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	--	--	--	--	2.6E-03	0.96	--	--	4.7E-04	0.17
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	--	--	2.7E-03	1.00	--	--	1.3E-04	0.047
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	2.5E-03	0.93	--	--	1.5E-04	0.055
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	2.5E-03	0.93	--	--	1.5E-04	0.055
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	--	--	0.015	5.52	--	--	2.1E-03	0.78
Lead	7439-92-1	Yes	Yes	Yes	--	--	--	--	0.024	8.80	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	--	--	--	--	2.3E-03	0.85	--	--	4.9E-04	0.18
Mercury	7439-97-6	Yes	Yes	Yes	--	--	--	--	1.5E-04	0.055	--	--	2.4E-05	8.9E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	5.8E-03	2.11	--	--	8.1E-04	0.29
Phosphorus	504	Yes	Yes	No	--	--	--	--	0.069	25.0	--	--	4.0E-03	1.46
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	0.043	15.7	--	--	0.013	4.70
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--
INORGANIC COMPOUNDS														
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	--	--	0.49	180	--	--	7.8E-03	2.84
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	0.057	20.8	--	--	0.10	38.1
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	0.14	52.3	--	--	0.022	8.20
Silica, Crystalline	7631-86-9	Yes	No	Yes	0.13	48.3	--	--	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
ORGANIC COMPOUNDS														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	0.99	360	--	--	0.93	340
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	--	--	--	--	0.088	31.9	--	--	0.23	85.1
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	0.014	5.24
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	0.070	25.7	--	--	0.012	4.46
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	6.6E-03	2.40
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	5.17	1,888	--	--	1.00	366
Hexane	110-54-3	Yes	Yes	Yes	--	--	--	--	0.16	58.1	--	--	1.35	493
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.088	32.2
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	0.045	16.6	--	--	0.030	10.8
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.011	3.93
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	--	--	--	--	0.41	149	--	--	0.24	85.9
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	0.17	61.0	--	--	0.025	9.22
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	0.079	28.9	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Total TACs					**0.13**	**48.3**	**0**	**0**	**8.04**	**2,934**	**0**	**0**	**4.10**	**1,495**
Total HAPs					**0**	**0**	**0**	**0**	**6.31**	**2,303**	**0**	**0**	**3.08**	**1,123**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					Production Scenario 2				CFU Super Sack Filling		Bailing Fugitives		Bulking Agent Silos	
					Glass Melt Operations		CFUs							
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS														
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	2.3E-04	0.084	--	--	7.6E-05	0.013	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	1.6E-04	0.058	--	--	5.3E-05	9.0E-03	--	--	--	--
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	1.9E-04	0.070	--	--	4.9E-05	8.3E-03	--	--	--	--
Chromium (total)	7440-47-3	No	Yes	No	8.2E-05	0.030	--	--	3.5E-05	6.0E-03	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	8.2E-05	0.030	--	--	3.5E-05	6.0E-03	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	3.5E-05	0.013	--	--	5.2E-06	8.9E-04	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	1.3E-03	0.46	--	--	3.5E-04	0.059	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	1.7E-03	0.62	--	--	4.2E-04	0.070	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	4.6E-05	0.017	--	--	5.2E-05	8.7E-03	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	0.023	8.49	--	--	2.9E-03	0.49	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	6.5E-05	0.011	--	--	--	--
Phosphorus	504	Yes	Yes	No	5.0E-03	1.82	--	--	1.3E-03	0.22	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	2.6E-03	0.96	--	--	9.7E-04	0.16	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--
INORGANIC COMPOUNDS														
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	2.5E-03	0.90	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	8.9E-03	3.26	--	--	5.4E-03	0.91	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	1.3E-03	0.48	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--	3.27	1,193	--	--
Silica, Crystalline	7631-86-9	Yes	No	Yes	--	--	0.17	60.7	3.8E-03	0.64	--	--	1.5E-04	0.020
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
ORGANIC COMPOUNDS														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	0.36	130	--	--	--	--	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	0.085	31.0	--	--	--	--	--	--	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.038	13.7	--	--	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	0.19	68.6	--	--	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	0.051	18.7	--	--	--	--	--	--	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	4.7E-03	1.71	--	--	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	0.021	7.76	--	--	--	--	--	--	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Total TACs					**0.79**	**288**	**0.17**	**60.7**	**0.016**	**2.62**	**3.27**	**1,193**	**1.5E-04**	**0.020**
Total HAPs					**0.42**	**152**	**0**	**0**	**4.9E-03**	**0.83**	**0**	**0**	**0**	**0**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate							
					Raw Material Handling		Raw Material Handling - Off Specification		Cooling Towers		Shipping and Receiving - Paint Usage	
									Circulation Drift			
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS												
Aluminum	7429-90-5	Yes	No	Yes	0.68	207	4.6E-04	5.5E-03	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	0.18	53.8	1.2E-04	1.4E-03	--	--	0.070	14.7
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	1.1E-05	3.5E-03	7.6E-09	9.1E-08	--	--	--	--
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	2.3E-03	0.70
Copper	7440-50-8	Yes	No	Yes	--	--	--	--	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	1.1E-04	0.035	7.6E-08	9.1E-07	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	0.11	34.0	7.4E-05	8.9E-04	--	--	--	--
INORGANIC COMPOUNDS												
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	0.049	14.8	3.3E-05	3.9E-04	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	0.012	4.26	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--	--	--
Silica, Crystalline	7631-86-9	Yes	No	Yes	1.72	523	1.1E-03	0.014	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	0.012	4.26	--	--
ORGANIC COMPOUNDS												
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	1.08	245
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	0.053	10.3
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	0.042	13.1
Toluene	108-88-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	0.19	42.1
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)												
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)												
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--
Total TACs					**2.74**	**833**	**1.8E-03**	**0.022**	**0.023**	**8.52**	**1.43**	**326**
Total HAPs					**1.3E-04**	**0.038**	**8.4E-08**	**1.0E-06**	**0**	**0**	**0.24**	**53.1**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					Emergency Generators				Natural Gas Combustion					
					Line 1		Line 2		Glass Plant - Excluding Forehearth		Forehearth		Non-Production	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS														
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	(1)	(1)	(1)	(1)	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	7.5E-05	3.7E-03	5.3E-05	2.6E-03	(1)	(1)	(1)	(1)	1.4E-05	5.1E-03
Barium	7440-39-3	Yes	No	No	--	--	--	--	(1)	(1)	(1)	(1)	3.1E-04	0.11
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	(1)	(1)	(1)	(1)	8.4E-07	3.1E-04
Cadmium	7440-43-9	Yes	Yes	Yes	7.0E-05	3.5E-03	5.0E-05	2.5E-03	(1)	(1)	(1)	(1)	7.7E-05	0.028
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	(1)	(1)	(1)	(1)	9.8E-05	0.036
Chromium VI	18540-29-9	Yes	Yes	Yes	4.7E-06	2.3E-04	3.3E-06	1.7E-04	(1)	(1)	(1)	(1)	3.9E-06	1.4E-03
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	(1)	(1)	(1)	(1)	5.9E-06	2.1E-03
Copper	7440-50-8	Yes	No	Yes	1.9E-04	9.6E-03	1.4E-04	6.8E-03	(1)	(1)	(1)	(1)	5.9E-05	0.022
Lead	7439-92-1	Yes	Yes	Yes	3.9E-04	0.019	2.7E-04	0.014	(1)	(1)	(1)	(1)	3.5E-05	0.013
Manganese	7439-96-5	Yes	Yes	Yes	1.5E-04	7.3E-03	1.0E-04	5.1E-03	(1)	(1)	(1)	(1)	2.6E-05	9.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	9.4E-05	4.7E-03	6.6E-05	3.3E-03	(1)	(1)	(1)	(1)	1.8E-05	6.6E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	4.4E-03	1.62	1.7E-04	0.063	1.2E-04	0.042
Nickel	7440-02-0	Yes	Yes	Yes	1.8E-04	9.1E-03	1.3E-04	6.4E-03	(1)	(1)	(1)	(1)	1.5E-04	0.054
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	1.0E-04	5.1E-03	7.3E-05	3.6E-03	(1)	(1)	(1)	(1)	1.7E-06	6.1E-04
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	6.2E-03	2.26	2.4E-04	0.088	1.6E-04	0.059
Zinc	7440-66-6	Yes	No	No	--	--	--	--	(1)	(1)	(1)	(1)	2.0E-03	0.74
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--
INORGANIC COMPOUNDS														
Ammonia	7664-41-7	Yes	No	Yes	0.037	1.87	0.026	1.32	8.59	3,141	0.34	123	0.22	81.6
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	8.7E-03	0.44	6.1E-03	0.31	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Silica, Crystalline	7631-86-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
ORGANIC COMPOUNDS														
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.037	1.83	0.026	1.29	0.012	4.22	4.5E-04	0.17	3.0E-04	0.11
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	1.6E-03	0.079	1.1E-03	0.056	7.2E-03	2.65	2.8E-04	0.10	1.9E-04	0.069
Benzene	71-43-2	Yes	Yes	Yes	8.7E-03	0.44	6.1E-03	0.31	(1)	(1)	8.4E-04	0.31	5.6E-04	0.20
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.010	0.51	7.2E-03	0.36	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	5.1E-04	0.026	3.6E-04	0.018	--	--	1.0E-03	0.36	6.6E-04	0.24
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	(1)	(1)	(1)	(1)	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	0.081	4.04	0.057	2.85	(1)	(1)	(1)	(1)	1.2E-03	0.43
Hexane	110-54-3	Yes	Yes	Yes	1.3E-03	0.063	8.9E-04	0.044	(1)	(1)	6.6E-04	0.24	4.4E-04	0.16
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	4.9E-03	0.25	3.5E-03	0.17	(1)	(1)	3.9E-03	1.41	2.6E-03	0.93
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	2.0E-03	0.099	1.4E-03	0.070	--	--	2.9E-03	1.04	1.9E-03	0.69
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)														
PAHs	401	Yes	Yes	Yes	1.7E-03	0.085	1.2E-03	0.060	2.7E-04	0.098	1.1E-05	3.8E-03	7.0E-06	2.5E-03
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.7E-06	8.4E-05	1.2E-06	5.9E-05	3.2E-06	1.2E-03	1.3E-07	4.6E-05	8.4E-08	3.1E-05
Naphthalene	91-20-3	Yes	Yes	Yes	9.2E-04	0.046	6.5E-04	0.033	8.1E-04	0.29	3.2E-05	0.012	2.1E-05	7.6E-03
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	1.57	78.4	1.11	55.3	--	--	--	--	--	--
Total TACs					**1.76**	**88.2**	**1.24**	**62.2**	**8.62**	**3,152**	**0.35**	**127**	**0.23**	**85.5**
Total HAPs					**0.16**	**7.95**	**0.11**	**5.61**	**0.020**	**7.27**	**1.0E-02**	**3.65**	**8.2E-03**	**3.01**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 17
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Total Facility Emissions Estimate			
					Production Scenario 1		Production Scenario 2	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS								
Aluminum	7429-90-5	Yes	No	Yes	0.68	207	0.68	207
Antimony	7440-36-0	Yes	Yes	Yes	1.0E-03	0.35	1.0E-03	0.35
Arsenic	7440-38-2	Yes	Yes	Yes	1.4E-04	0.011	1.4E-04	0.011
Barium	7440-39-3	Yes	No	No	0.25	69.3	0.25	69.8
Beryllium	7440-41-7	Yes	Yes	Yes	8.4E-07	3.1E-04	8.4E-07	3.1E-04
Cadmium	7440-43-9	Yes	Yes	Yes	5.8E-04	0.16	3.3E-03	1.16
Chromium (total)	7440-47-3	No	Yes	No	7.5E-04	0.27	2.9E-03	1.06
Chromium VI	18540-29-9	Yes	Yes	Yes	6.7E-04	0.23	2.8E-03	1.02
Cobalt	7440-48-4	Yes	Yes	Yes	2.3E-03	0.72	2.3E-03	0.72
Copper	7440-50-8	Yes	No	Yes	0.014	4.76	0.019	6.85
Lead	7439-92-1	Yes	Yes	Yes	2.9E-03	0.78	0.027	9.57
Manganese	7439-96-5	Yes	Yes	Yes	2.7E-03	0.90	3.2E-03	1.07
Mercury	7439-97-6	Yes	Yes	Yes	0.026	9.04	0.027	9.06
Molybdenum trioxide	1313-27-5	Yes	No	No	4.7E-03	1.73	4.7E-03	1.73
Nickel	7440-02-0	Yes	Yes	Yes	2.2E-03	0.68	7.1E-03	2.49
Phosphorus	504	Yes	Yes	No	0.026	9.16	0.079	28.5
Selenium	7782-49-2	Yes	Yes	Yes	1.8E-04	9.4E-03	1.8E-04	9.4E-03
Vanadium	7440-62-2	Yes	No	Yes	6.6E-03	2.40	6.6E-03	2.40
Zinc	7440-66-6	Yes	No	No	0.042	15.0	0.061	22.2
Zinc Oxide	1314-13-2	Yes	No	No	0.11	34.0	0.11	34.0
INORGANIC COMPOUNDS								
Ammonia	7664-41-7	Yes	No	Yes	9.21	3,349	9.21	3,349
Carbon disulfide	75-15-0	Yes	Yes	Yes	2.5E-03	0.90	2.5E-03	0.90
Fluorides	239	Yes	No	Yes	0.071	21.9	0.56	201
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.81	294	0.16	59.4
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.015	0.74	0.015	0.74
Phosphoric Acid	7664-38-2	Yes	No	Yes	0.012	4.26	0.012	4.26
Glasswool Fibers	352	Yes	No	No	3.40	1,241	3.44	1,254
Silica, Crystalline	7631-86-9	Yes	No	Yes	1.86	572	1.89	584
Sulfuric Acid	7664-93-9	Yes	No	Yes	0.012	4.26	0.012	4.26
ORGANIC COMPOUNDS								
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.075	7.62	0.075	7.62
Acetone	67-64-1	Yes	No	Yes	3.43	1,102	3.35	1,075
Acrolein	107-02-8	Yes	Yes	Yes	0.010	2.96	0.010	2.96
Benzene	71-43-2	Yes	Yes	Yes	0.55	194	0.42	149
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.055	14.6	0.055	14.6
Cyclohexane	110-82-7	Yes	No	Yes	0.014	5.24	0.014	5.24
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.067	15.4	0.14	41.1
Chloroethane	75-00-3	Yes	Yes	Yes	6.6E-03	2.40	6.6E-03	2.40
Formaldehyde	50-00-0	Yes	Yes	Yes	18.0	6,530	6.51	2,330
Hexane	110-54-3	Yes	Yes	Yes	2.44	891	1.56	570
Chloromethane	74-87-3	Yes	Yes	Yes	0.17	62.1	0.088	32.2
2-Butanone	78-93-3	Yes	No	Yes	0.074	27.2	0.080	29.1
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	0.011	3.93	0.011	3.93
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	0.042	13.1	0.042	13.1
Toluene	108-88-3	Yes	Yes	Yes	0.77	279	0.68	246
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.22	53.2	0.39	114
o-Xylene	95-47-6	Yes	Yes	Yes	0	0	0.079	28.9
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)								
PAHs	401	Yes	Yes	Yes	3.2E-03	0.25	3.2E-03	0.25
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	6.3E-06	1.4E-03	6.3E-06	1.4E-03
Naphthalene	91-20-3	Yes	Yes	Yes	2.4E-03	0.39	2.4E-03	0.39
Diesel Particulate Matter (DPM)								
DPM	200	Yes	No	Yes	2.67	134	2.67	134
Total TACs					**45.2**	**15,184**	**32.8**	**10,655**
Total HAPs					**23.3**	**8,376**	**10.4**	**3,659**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 18
Glass Plant TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt
Daily Throughput (tons/day)	(1)	5.70	47.7	2.16	64.8
Annual Throughput (tons/yr)	(1)	1,199	6,006	594	8,078

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor (2) (lb/ton)				Emissions Estimate								Total Facility Emissions Estimates	
									Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals																		
Antimony	7440-36-0	Yes	Yes	Yes	0	5.4E-05	3.2E-04	3.6E-06	--	--	2.6E-03	0.32	7.0E-04	0.19	2.3E-04	0.029	3.5E-03	0.54
Arsenic	7440-38-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	5.2E-05	3.3E-05	2.2E-04	2.5E-06	3.0E-04	0.062	1.6E-03	0.20	4.7E-04	0.13	1.6E-04	0.020	2.5E-03	0.41
Beryllium	7440-41-7	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	0	3.4E-05	6.0E-05	3.0E-06	--	--	1.6E-03	0.21	1.3E-04	0.036	1.9E-04	0.024	2.0E-03	0.27
Chromium (total)	7440-47-3	No	Yes	No	1.8E-05	3.2E-05	7.0E-05	1.3E-06	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010	1.9E-03	0.27
Chromium VI	18540-29-9	Yes	Yes	Yes	1.8E-05	3.2E-05	7.0E-05	1.3E-06	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010	1.9E-03	0.27
Cobalt	7440-48-4	Yes	Yes	Yes	0	1.4E-06	0	5.4E-07	--	--	6.7E-05	8.4E-03	--	--	3.5E-05	4.3E-03	1.0E-04	0.013
Copper	7440-50-8	Yes	No	Yes	4.4E-04	1.9E-04	9.9E-04	1.9E-05	2.5E-03	0.53	9.1E-03	1.14	2.1E-03	0.59	1.3E-03	0.16	0.015	2.41
Lead	7439-92-1	Yes	Yes	Yes	0	3.0E-04	0	2.6E-05	--	--	0.014	1.82	--	--	1.7E-03	0.21	0.016	2.03
Manganese	7439-96-5	Yes	Yes	Yes	8.7E-05	4.8E-05	2.3E-04	7.1E-07	5.0E-04	0.10	2.3E-03	0.29	4.9E-04	0.13	4.6E-05	5.7E-03	3.3E-03	0.53
Mercury	7439-97-6	Yes	Yes	Yes	4.5E-06	3.7E-06	1.1E-05	3.6E-04	2.6E-05	5.4E-03	1.7E-04	0.022	2.4E-05	6.7E-03	0.023	2.90	0.023	2.93
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-05	7.3E-05	3.7E-04	0	2.2E-04	0.046	3.5E-03	0.44	8.1E-04	0.22	--	--	4.5E-03	0.71
Phosphorus	504	Yes	Yes	No	7.3E-04	8.6E-04	1.9E-03	7.7E-05	4.1E-03	0.87	0.041	5.17	4.0E-03	1.10	5.0E-03	0.62	0.054	7.76
Selenium	7782-49-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	1.1E-03	5.4E-04	6.0E-03	4.1E-05	6.2E-03	1.29	0.026	3.24	0.013	3.54	2.6E-03	0.33	0.047	8.40
Inorganic Compounds																		
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	3.8E-05	--	--	--	--	--	--	2.5E-03	0.31	2.5E-03	0.31
Fluorides	239	Yes	No	Yes	0	6.2E-03	3.6E-03	1.4E-04	--	--	0.29	37.1	7.8E-03	2.14	8.9E-03	1.11	0.31	40.4
Hydrogen fluoride	7664-39-3	Yes	Yes	Yes	0.033	7.2E-04	0.048	2.0E-05	0.19	39.3	0.034	4.31	0.10	28.7	1.3E-03	0.16	0.33	72.5
Glasswool fibers	352	Yes	No	No	5.1E-03	1.8E-03	0.010	--	0.029	6.11	0.086	10.8	0.022	6.18	--	--	0.14	23.1
Organic Compounds																		
Acetone	67-64-1	Yes	No	Yes	0.050	0.019	0.43	5.5E-03	0.28	59.6	0.92	115	0.93	256	0.36	44.3	2.49	475
Benzene	71-43-2	Yes	Yes	Yes	9.9E-03	4.2E-03	0.11	1.3E-03	0.056	11.8	0.20	25.5	0.23	64.2	0.085	10.6	0.58	112
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	2.2E-04	--	5.8E-04	--	--	0.011	1.33	--	--	0.038	4.68	0.048	6.00
Cyclohexane	110-82-7	Yes	No	Yes	--	--	6.7E-03	--	--	--	--	--	0.014	3.95	--	--	0.014	3.95
Ethyl benzene	100-41-4	Yes	Yes	Yes	--	8.9E-04	5.7E-03	--	--	--	0.042	5.32	0.012	3.36	--	--	0.054	8.68
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	3.1E-03	--	--	--	--	--	6.6E-03	1.81	--	--	6.6E-03	1.81

Table 18
Glass Plant TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt
Daily Throughput (tons/day)	(1)	5.70	47.7	2.16	64.8
Annual Throughput (tons/yr)	(1)	1,199	6,006	594	8,078

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor (2) (lb/ton)				Emissions Estimate								Total Facility Emissions Estimates	
									Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Organic Compounds cont.																		
Formaldehyde	50-00-0	Yes	Yes	Yes	0.78	0.065	0.47	2.9E-03	4.45	935	3.10	390	1.00	276	0.19	23.4	8.74	1,625
Hexane	110-54-3	Yes	Yes	Yes	0.049	0.016	0.63	7.9E-04	0.28	58.3	0.78	98.5	1.35	371	0.051	6.37	2.46	534
Chloromethane	74-87-3	Yes	Yes	Yes	3.8E-03	--	0.041	--	0.022	4.60	--	--	0.088	24.2	--	--	0.11	28.8
2-Butanone	78-93-3	Yes	No	Yes	1.9E-03	7.8E-04	0.014	7.2E-05	0.011	2.25	0.037	4.70	0.030	8.14	4.7E-03	0.58	0.082	15.7
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	5.0E-03	--	--	--	--	--	0.011	2.96	--	--	0.011	2.96
Toluene	108-88-3	Yes	Yes	Yes	0.023	0.013	0.11	3.3E-04	0.13	28.1	0.60	75.7	0.24	64.7	0.021	2.65	0.99	171
m,p-Xylene	1330-20-7	Yes	Yes	Yes	--	2.1E-03	0.012	--	--	--	0.10	12.6	0.025	6.95	--	--	0.13	19.6
o-Xylene	95-47-6	Yes	Yes	Yes	--	1.0E-03	--	--	--	--	0.048	5.98	--	--	--	--	0.048	5.98

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

Table 19
CFU TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type		Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt
Daily Production (tons/day)	(1)	5.70	47.7	2.16	64.8
Annual Production (tons/yr)	(1)	1,199	6,006	594	8,078

TAC	CAS	Regulatory Category (Yes/No)			CFU Emission Factor (lb/ton)				Emission Estimates								Total Facility Emission Estimates	
					Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		TAC	HAP	RBC					Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Silica, crystalline	7631-86-9	Yes	No	Yes	5.0E-03 (c)	1.8E-03 (c)	0.010 (c)	3.5E-05 (c)	0.029	6.05	0.085	10.7	0.022	6.12	2.2E-03	0.28	0.14	23.2

NOTES:

CFU = ceramic filtration unit.

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

(c) Silica emission factor (lb/ton) = (CFU filterable PM emission factor [lb/ton]) x (bulking agent percent of filterable PM [%])/100) x (bulking agent silica content [%])/100)

Rotary fine CFU filterable PM emission factor (lb/ton) =	0.51	(2)
Rotary coarse/ultra rotary coarse CFU filterable PM emission factor (lb/ton) =	0.18	(2)
Flameblown CFU filterable PM emission factor (lb/ton) =	1.04	(2)
Glass melt CFU filterable PM emission factor (lb/ton) =	3.5E-03	(2)
Bulking agent percent of filterable PM (%) =	99.0	(3)
Bulking agent silica content (%) =	1.00	(4)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(3) Conservatively assume remainder of filterable PM is bulking agent.

(4) Composition information from vendor SDS. Average of range.

Table 20
CFU Super Sack Filling TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS/ODEQ Sequence Number	Glass Plant CFU Exhaust TAC Emission Factor [1] (lb/ton)				CFU Super Sack Filter TAC Emission Factor (lb/ton)				CFU Super Sack Filter Emission Estimates								Total CFU Super Sack Filter Emission Estimates	
										Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Antimony	7440-36-0	0	5.4E-05	3.2E-04	3.6E-06	-- [c]	1.2E-06 [c]	3.8E-07 [c]	9.6E-07 [c]	--	--	1.5E-05	3.8E-03	4.6E-06	1.2E-03	1.2E-05	3.0E-03	3.1E-05	8.0E-03
Arsenic	7440-38-2	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	5.2E-05	3.3E-05	2.2E-04	2.5E-06	1.2E-07 [c]	7.6E-07 [c]	2.5E-07 [c]	6.7E-07 [c]	1.4E-06	3.6E-04	9.1E-06	2.4E-03	3.0E-06	7.9E-04	8.0E-06	2.1E-03	2.2E-05	5.6E-03
Beryllium	7440-41-7	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	0	3.4E-05	6.0E-05	3.0E-06	-- [c]	7.9E-07 [c]	7.0E-08 [c]	8.0E-07 [c]	--	--	9.4E-06	2.4E-03	8.4E-07	2.2E-04	9.6E-06	2.5E-03	2.0E-05	5.2E-03
Chromium (total)	7440-47-3	1.8E-05	3.2E-05	7.0E-05	1.3E-06	4.1E-08 [c]	7.3E-07 [c]	8.1E-08 [c]	3.4E-07 [c]	4.9E-07	1.3E-04	8.8E-06	2.3E-03	9.8E-07	2.5E-04	4.1E-06	1.1E-03	1.4E-05	3.7E-03
Chromium VI	18540-29-9	1.8E-05	3.2E-05	7.0E-05	1.3E-06	4.1E-08 [c]	7.3E-07 [c]	8.1E-08 [c]	3.4E-07 [c]	4.9E-07	1.3E-04	8.8E-06	2.3E-03	9.8E-07	2.5E-04	4.1E-06	1.1E-03	1.4E-05	3.7E-03
Cobalt	7440-48-4	0	1.4E-06	0	5.4E-07	-- [c]	3.2E-08 [c]	-- [c]	1.5E-07 [c]	--	--	3.8E-07	1.0E-04	--	--	1.7E-06	4.5E-04	2.1E-06	5.5E-04
Copper	7440-50-8	4.4E-04	1.9E-04	9.9E-04	1.9E-05	9.8E-07 [c]	4.3E-06 [c]	1.2E-06 [c]	5.2E-06 [c]	1.2E-05	3.1E-03	5.2E-05	0.014	1.4E-05	3.6E-03	6.3E-05	0.016	1.4E-04	0.036
Lead	7439-92-1	0	3.0E-04	0	2.6E-05	-- [c]	6.9E-06 [c]	-- [c]	7.2E-06 [c]	--	--	8.3E-05	0.022	--	--	8.6E-05	0.022	1.7E-04	0.044
Manganese	7439-96-5	8.7E-05	4.8E-05	2.3E-04	7.1E-07	1.9E-07 [c]	1.1E-06 [c]	2.6E-07 [c]	1.9E-07 [c]	2.3E-06	6.0E-04	1.3E-05	3.4E-03	3.2E-06	8.2E-04	2.3E-06	5.9E-04	2.1E-05	5.4E-03
Mercury	7439-97-6	4.5E-06	3.7E-06	1.1E-05	3.6E-04	1.0E-08 [c]	8.4E-08 [c]	1.3E-08 [c]	9.7E-05 [c]	1.2E-07	3.1E-05	1.0E-06	2.6E-04	1.6E-07	4.1E-05	1.2E-03	0.30	1.2E-03	0.30
Nickel	7440-02-0	3.9E-05	7.3E-05	3.7E-04	0	8.7E-08 [c]	1.7E-06 [c]	4.4E-07 [c]	-- [c]	1.0E-06	2.7E-04	2.0E-05	5.2E-03	5.3E-06	1.4E-03	--	--	2.6E-05	6.8E-03
Phosphorus	504	7.3E-04	8.6E-04	1.9E-03	7.7E-05	1.6E-06 [c]	2.0E-05 [c]	2.2E-06 [c]	2.1E-05 [c]	1.9E-05	5.0E-03	2.4E-04	0.061	2.6E-05	6.7E-03	2.5E-04	0.065	5.3E-04	0.14
Selenium	7782-49-2	0	0	0	0	-- [c]	-- [c]	-- [c]	-- [c]	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	1.1E-03	5.4E-04	6.0E-03	4.1E-05	2.4E-06 [c]	1.2E-05 [c]	7.0E-06 [c]	1.1E-05 [c]	2.9E-05	7.5E-03	1.5E-04	0.038	8.4E-05	0.022	1.3E-04	0.034	3.9E-04	0.10
Fluorides	239	0	6.2E-03	3.6E-03	1.4E-04	-- [c]	1.4E-04 [c]	4.2E-06 [c]	3.7E-05 [c]	--	--	1.7E-03	0.44	5.1E-05	0.013	4.5E-04	0.12	2.2E-03	0.57
Silica, crystalline	7631-86-9	--	--	--	--	3.2E-05 [d]	3.2E-05 [d]	3.2E-05 [d]	3.2E-05 [d]	3.8E-04	0.100	3.8E-04	0.100	3.8E-04	0.100	3.8E-04	0.100	1.5E-03	0.40

NOTES:

CFU = ceramic filtration unit.

TAC = toxic air contaminant.

(a) Daily CFU super sack filter emission estimate (lb/day) = (super sack filter TAC emission factor [lb/ton]) x (daily waste generation [tons/day])

Daily waste generation (tons/day) = 12.0 (2)

(b) Annual CFU super sack filter emission estimate (lb/yr) = (CFU super sack filter TAC emission factor [lb/ton]) x (annual waste generation [tons/yr])

Annual waste generation (tons/yr) = 3,111 (2)

(c) CFU super sack filter TAC emission factor (lb/ton) = (Glass Plant CFU exhaust TAC emission factor [lb/ton]) / (Glass Plant PM emission factor [lb/ton]) x (CFU super sack filter PM emission factor [lb/ton])

CFU super sack filter PM emission factor (lb/ton) = 3.2E-03 (3)

Rotary fine PM emission factor (lb/ton) = 1.43 (4)

Rotary coarse/ultra rotary coarse PM emission factor (lb/ton) = 0.14 (5)

Flameblown PM emission factor (lb/ton) = 2.73 (4)

Glass melt PM emission factor (lb/ton) = 0.012 (4)

Table 20
CFU Super Sack Filling TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

(d) Emission factor (lb/ton) = (CFU super sack filter PM emission factor [lb/ton]) x (bulking agent silica content [%]) / 100

CFU super sack filter PM emission factor (lb/ton) =	3.2E-03	(3)
Bulking agent silica content (%) =	1.00	(6)

REFERENCES:

(1) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

(2) See Table 1, Input Assumptions and Parameters. Conservatively assign full waste collection to each fiber type.

(3) AP-42 Chapter 11.26 (November 1995), Table 11.26-1 "Emission Factors for Talc Processing." Emission factor for ground talc storage bin loading, with fabric filter. Emission factor used as representative of CFU super sack loading with fabric filter control. Emission factor converted from 0.0016 lb/Mlb to 0.0032 lb/ton.

(4) Summary of 2018 source test results. Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.

(5) Conservatively used the lower of the rotary coarse and ultra rotary coarse results. Value represents the average emission factor for Ultra Rotary Coarse source tests dated September 12 and 15, 2018.

(6) Composition information from vendor SDS. Average of range.

Table 21
Glass Plant Baling Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor [a] (lb/ton)	Emission Estimates	
		TAC	HAP	RBC		Daily [b] (lb/day)	Annual [c] (lb/yr)
Glasswool fibers	352	Yes	No	No	0.040	2.22	312

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Emission factor (lb/ton) = (percentage of fiber airborne) / 100% x (percentage of airborne fiber as fugitive) / 100% x (2,000 lb/ton)

Percentage of fiber airborne = 0.01 (1)

Percentage of airborne fiber as fugitive = 20 (2)

(b) Daily emissions estimate (lb/day) = (emission factor [lb/ton]) x (daily fiber production [tons/day])

Daily fiber production (tons/day) = 55.56 (3)

(c) Annual emissions estimate (lb/yr) = (emission factor [lb/ton]) x (annual fiber production [tons/yr])

Annual fiber production (tons/yr) = 7,799 (3)

REFERENCES:

(1) Assume less than 0.01% of all fiber produced becomes airborne.

(2) Assume 20% of airborne fiber leaves the production building.

(3) See Table 1, Input Assumptions and Parameters. Sum of rotary fine, ultra rotary coarse/rotary coarse, and flameblown fiber production.

Table 22
Bulking Agent Storage Silos TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter		Glass Plant 1 Silo	Glass Plant 2 Silo
Daily Hours of Operation (hrs/day)	(1)	1.50	1.50
Annual Hours of Operation (hrs/yr)	(1)	52.0	65.0
PM_{10} Emission Factor (lb/hr)	(2)	0.0051	0.0051

TAC	CAS	Regulatory Category (Yes/No)			Emissions Estimates				Total Silo Emissions Estimate	
					Glass Plant 1 Silo		Glass Plant 2 Silo			
		TAC	HAP	RBC	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Silica, crystalline	7631-86-9 [4]	Yes	No	Yes	7.7E-05	2.7E-03	7.7E-05	3.3E-03	1.5E-04	6.0E-03

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM_{10} emission factor [lb/hr]) x (daily hours of operation [hrs/day]) x (weight percent [%])/100

Weight percent crystalline silica (%) = 1.00 (3)

(b) Annual emissions estimate (lb/yr) = (PM_{10} emission factor [lb/hr]) x (annual hours of operation [hrs/hr]) x (weight percent [%])/100

Weight percent crystalline silica (%) = 1.00 (3)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) From Draft PSD permit provided by the DEQ in June 2020. Assumes PM_{10} emissions as representative of respirable portion of particulate emissions.

(3) Composition information from vendor SDS. Average of range.

(4) Assigned CAS for Silica, crystalline. Not all crystalline silica in product is of respirable size.

Table 23
Raw Material Handling TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Product Usage [1]		Weight Percent (%)	Emissions Estimate	
			TAC	HAP	RBC	Daily (tons/day)	Annual (tons/yr)		Daily [a] (lb/day)	Annual [b] (lb/yr)
Barium Carbonate	Barium	7440-39-3 [3]	Yes	No	No	0.84	257	97.0 [4]	0.031	9.47
Zinc Oxide	Zinc Oxide	1314-13-2	Yes	No	No	0.53	162	97.5 [5]	0.020	6.00
	Lead	7439-92-1 [6]	Yes	Yes	Yes			0.10 [7]	2.0E-05	6.2E-03
	Cadmium	7440-43-9 [8]	Yes	Yes	Yes			0.010 [7]	2.0E-06	6.2E-04
Fluorspar	Fluorides	239 [9]	Yes	No	Yes	[redacted]			0.015	4.51
	Silica, crystalline	7631-86-9	Yes	No	Yes				2.2E-04	0.068
Sand	Silica, crystalline	7631-86-9 [11]	Yes	No	Yes				0.51	154
	Aluminum	7429-90-5 [12]	Yes	No	Yes				1.7E-03	0.51
Dolomite	Silica, crystalline	7631-86-9 [11]	Yes	No	Yes				1.4E-03	0.42
Limestone	Silica, crystalline	7631-86-9 [11]	Yes	No	Yes				1.9E-05	5.8E-03
Nepheline Syenite	Aluminum	7429-90-5 [12]	Yes	No	Yes				0.20	59.5

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.038 (2)

(b) Annual emissions estimate (lb/yr) = (PM emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.038 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Information provided by Hollingsworth & Vose Fiber Company. See Title V permit application. Represents total PM emissions across raw material locations. Sum of PM emission factors for unloading & conveying, storage, weighing & mixing, and batch mix storage.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Composition information from vendor SDS. Average of range.

(6) Assigned CAS for lead and compounds.

(7) Composition information from vendor SDS. Compound present in trace quantities.

(8) Assigned CAS for cadmium and compounds.

(9) Assigned ODEQ ID for fluorides.

[redacted]

(11) Assigned CAS for Silica, crystalline. Not all crystalline silica in product is of a respirable size. Conservatively assumes all crystalline silica emitted from baghouse is of respirable size.

(12) Assigned CAS for aluminum and compounds.

[redacted]

Table 24
Raw Material Handling - Off Specification TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Percent of Off Specification Makeup (1) (%)	Off Specification Throughput		Weight Percent (%)	Emissions Estimate	
			TAC	HAP	RBC		Daily (a) (tons/day)	Annual (b) (tons/yr)		Daily (lb/day)	Annual (lb/yr)
Barium Carbonate	Barium	7440-39-3 (3)	Yes	No	No	3.9	0.039	0.47	97.0 (4)	7.6E-05 (c)	9.1E-04 (d)
Zinc Oxide	Zinc Oxide	1314-13-2	Yes	No	No	2.5	0.025	0.30	97.5 (6)	4.9E-05 (c)	5.9E-04 (d)
	Lead	7439-92-1 (7)	Yes	Yes	Yes				0.10 (8)	5.0E-08 (c)	6.0E-07 (d)
	Cadmium	7440-43-9 (9)	Yes	Yes	Yes				0.010 (8)	5.0E-09 (c)	6.0E-08 (d)
Fluorspar	Fluorides	239 (10)	Yes	No	Yes	[redacted]				3.6E-05 (c)	4.4E-04 (d)
	Silica, crystalline	7631-86-9	Yes	No	Yes					5.5E-07 (c)	6.6E-06 (d)
Sand	Silica, crystalline	7631-86-9 (12)	Yes	No	Yes					1.2E-03 (c)	0.015 (d)
	Aluminum	7429-90-5 (13)	Yes	No	Yes					4.1E-06 (c)	4.9E-05 (d)
Dolomite	Silica, crystalline	7631-86-9 (12)	Yes	No	Yes					3.4E-06 (c)	4.0E-05 (d)
Limestone	Silica, crystalline	7631-86-9 (12)	Yes	No	Yes					4.8E-08 (c)	5.8E-07 (d)
Nepheline Syenite	Aluminum	7429-90-5 (13)	Yes	No	Yes					4.7E-04 (c)	5.7E-03 (d)

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily product throughput (tons/day) = (percent of Off Specification makeup [%]) / 100 x (Off Specification daily throughput [tons/day])

Off Specification daily throughput (tons/day) = 1.00 (2)

(b) Annual product throughput (tons/yr) = (percent of Off Specification makeup [%]) / 100 x (Off Specification annual throughput [tons/yr])

Off Specification annual throughput (tons/yr) = 12.0 (2)

(c) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.002 (5)

(d) Annual emissions estimate (lb/yr) = (PM emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.002 (5)

REFERENCES:

(1) Assumes same ratio of raw material usage as presented in Table 1, Input Assumptions and Parameters. Actual batch makeup varies by glass type.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Information provided by Hollingsworth & Vose Fiber Company. See Oregon Department of Environmental Quality Standard Air Contamination Discharge Permit No. 02-2173-ST-01 issued November 23, 2022.

(6) Composition information from vendor SDS. Average of range.

(7) Assigned CAS for lead and compounds.

(8) Composition information from vendor SDS. Compound present in trace quantities.

(9) Assigned CAS for cadmium and compounds.

(10) Assigned ODEQ ID for fluorides.

[redacted]

(12) Assigned CAS for Silica, crystalline. Not all crystalline silica in the product is of a respirable size. Conservatively assumes all crystalline silica emitted from baghouse is of respirable size.

(13) Assigned CAS for aluminum and compounds.

[redacted]

Table 25
Cooling Tower - Circulation Drift - TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Production Line 1 and 2	Production Line 3	Production Line 4
Total Water Circulation Rate (gpm) [1]	900	1,000	800

Pollutant	CAS	Regulatory Category (Yes/No)			Concentration [1] (ppm)	Emissions Estimates						Total Facility Emissions Estimates	
						Production Line 1 and 2		Production Line 3		Production Line 4			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual
PM	--	--	--	--	--	540 [a]	197,258 [b]	600 [a]	219,175 [b]	480 [a]	175,340 [b]	1,621	591,773
Phosphoric Acid	7664-38-2	Yes	No	Yes	7.20	3.9E-03 [c]	1.42 [d]	4.3E-03 [c]	1.58 [d]	3.5E-03 [c]	1.26 [d]	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	7.20	3.9E-03 [c]	1.42 [d]	4.3E-03 [c]	1.58 [d]	3.5E-03 [c]	1.26 [d]	0.012	4.26

NOTES:

gpm = gallons per minute.

HAP = hazardous air pollutant

ppm = parts per million.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily drift loss (lb/day) = (total water circulation rate [gpm]) x (density of water [lb/gal]) x (drift loss percent of circulating water [%] / 100) x (60 min/hr) x (daily hours of operation [hrs/day])

Density of water (lb/gal) = 8.34 (1)

Daily hours of operation (hr/day) = 24.0 (2)

Drift loss percent of circulating water (%) = 5.0E-03 (1)

(b) Annual emissions estimate (lb/yr) = (daily emissions estimate [lb/day]) x (annual days of operation [days/yr])

Annual days of operation (days/yr) = 365 (1)

(c) Daily emissions estimate (lb/day) = (daily PM emissions estimate [lb/day]) x (concentration [ppm] / 1,000,000); see Reference (3).

(d) Annual emissions estimate (lb/yr) = (annual PM emissions estimate [lb/yr]) x (concentration [ppm] / 1,000,000); see Reference (3).

REFERENCES:

(1) See Table 2, Input Assumptions and Parameters - Cooling Towers.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assumes the compostiion of the drift loss is same as the cooling tower makeup water.

Table 26
Cooling Tower - Material Balance - TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS	Regulatory Category (Yes/No)			Weight Percent (1) (%)	Emissions Estimates	
		TAC	HAP	RBC		Daily (a) (lb/day)	Annual (b) (lb/yr)
Glutaraldehyde	111-30-8	Yes	No	Yes	45.0	7.65	140
Methanol	67-56-1	Yes	Yes	Yes	0.50	0.085	1.55

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (daily product usage [lb/day]) x (weight percent [%] / 100)

Daily product usage (lb/day) = 17.0 (2)

(b) Annual emissions estimate (lb/yr) = (annual product usage [lb/yr]) x (weight percent [%] / 100)

Annual product usage (lb/yr) = 310 (2)

REFERENCES:

(1) Composition information from vendor SDS.

(2) See Table 2, Input Assumptions and Parameters - Cooling Towers.

Table 27
Spray Paint Usage TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS	Regulatory Category (Yes/No)			Weight Percent (%)		Emission Factor (lb/lb)		Usage [3]		Emissions Estimates	
			TAC	HAP	RBC	Maximum [1]	Average [2]	Daily	Annual	Daily (lb/day)	Annual (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Total	Acetone	67-64-1	Yes	No	Yes	36.0	26.2	0.36 [c]	0.26 [d]	1.00	342	0.36	89.6
	Barium	7440-39-3	Yes	No	No	3.10	2.10	0.023 [e]	0.016 [f]			0.023	5.39
	Cobalt	7440-48-4	Yes	Yes	Yes	0.10	0.10	7.5E-04 [e]	7.5E-04 [f]			7.5E-04	0.26
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.75	1.10	0.018 [c]	0.011 [d]			0.018	3.76
	1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.40	1.40	0.014 [c]	0.014 [d]			0.014	4.79
	Xylenes	1330-20-7	Yes	Yes	Yes	6.25	4.50	0.063 [c]	0.045 [d]			0.063	15.4

Product	TAC	CAS	Regulatory Category (Yes/No)			Weight Percent (%)
			TAC	HAP	RBC	
Black Paint	Acetone	67-64-1	Yes	No	Yes	25.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	4.40 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.00 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Gray Paint	Acetone	67-64-1	Yes	No	Yes	17.5 [7]
	Xylenes	1330-20-7	Yes	Yes	Yes	6.25 [7]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.75 [7]
Purple Paint	Acetone	67-64-1	Yes	No	Yes	26.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	5.00 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.80 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.20 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Blue Paint	Acetone	67-64-1	Yes	No	Yes	27.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	3.50 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	0.90 [5]
Green Paint	Acetone	67-64-1	Yes	No	Yes	25.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	5.10 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.60 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.20 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Orange Paint	Acetone	67-64-1	Yes	No	Yes	27.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	4.20 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	3.10 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	1.00 [5]
	Cobalt 2-Ethylhexanoate	7440-48-4 [6]	Yes	Yes	Yes	0.10 [5]
Red Paint	Acetone	67-64-1	Yes	No	Yes	36.0 [5]
	Xylenes	1330-20-7	Yes	Yes	Yes	2.70 [5]
	Barium Sulfate	7440-39-3 [8]	Yes	No	No	1.70 [5]
	1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.40 [5]
	Ethylbenzene	100-41-4	Yes	Yes	Yes	0.60 [5]

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (daily product usage [lb/day]) x (emission factor [lb/lb])

(b) Annual emissions estimate (lb/yr) = (annual product usage [lb/yr]) x (emission factor [lb/lb])

(c) Daily emission factor (lb/lb) = (maximum weight percent [%]) / 100

(d) Annual emission factor (lb/lb) = (average weight percent [%]) / 100

(e) Daily emission factor (lb/lb) = (maximum weight percent [%]) / 100 x (1 - [transfer efficiency {%}]/100)
Transfer efficiency (%) = 25.0 (4)

(f) Annual emission factor (lb/lb) = (average weight percent [%]) / 100 x (1 - [transfer efficiency {%}]/100)
Transfer efficiency (%) = 25.0 (4)

REFERENCES:

(1) Maximum TAC of content of paints used the facility.

(2) Average of content of paints used the facility.

(3) See Table 1, Input Assumptions and Parameters.

(4) AP-42 Chapter 4.2.2.12 (May 1983) Table 4.2.2.12-1 "Coating Method Transfer Efficiencies." Assume transfer efficiency for air atomized spray.

(5) Composition information from vendor SDS.

(6) Assigned CAS for Cobalt and compounds.

(7) Composition information from vendor SDS. Represents average of range.

(8) Assigned CAS for Barium and compounds.

Table 28
Emergency Generator TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter		Emergency Generator 1	Emergency Generator 2
Daily Fuel Consumption (gal/day)	(1)	46.8	33.0
Annual Fuel Consumption (gal/yr)	(1)	164	132

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/Mgal)	Emissions Estimates				Total Facility Emissions Estimates	
						Emergency Generator 1		Emergency Generator 2			
		TAC	HAP	RBC		Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals											
Arsenic	7440-38-2	Yes	Yes	Yes	1.6E-03 (2)	7.5E-05	2.6E-04	5.3E-05	2.1E-04	1.3E-04	4.7E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.5E-03 (2)	7.0E-05	2.5E-04	5.0E-05	2.0E-04	1.2E-04	4.4E-04
Chromium VI	18540-29-9	Yes	Yes	Yes	1.0E-04 (2)	4.7E-06	1.6E-05	3.3E-06	1.3E-05	8.0E-06	3.0E-05
Copper	7440-50-8	Yes	No	Yes	4.1E-03 (2)	1.9E-04	6.7E-04	1.4E-04	5.4E-04	3.3E-04	1.2E-03
Lead	7439-92-1	Yes	Yes	Yes	8.3E-03 (2)	3.9E-04	1.4E-03	2.7E-04	1.1E-03	6.6E-04	2.5E-03
Manganese	7439-96-5	Yes	Yes	Yes	3.1E-03 (2)	1.5E-04	5.1E-04	1.0E-04	4.1E-04	2.5E-04	9.2E-04
Mercury	7439-97-6	Yes	Yes	Yes	2.0E-03 (2)	9.4E-05	3.3E-04	6.6E-05	2.6E-04	1.6E-04	5.9E-04
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-03 (2)	1.8E-04	6.4E-04	1.3E-04	5.1E-04	3.1E-04	1.2E-03
Selenium	7782-49-2	Yes	Yes	Yes	2.2E-03 (2)	1.0E-04	3.6E-04	7.3E-05	2.9E-04	1.8E-04	6.5E-04
Organic Compounds											
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.78 (2)	0.037	0.13	0.026	0.10	0.063	0.23
Acrolein	107-02-8	Yes	Yes	Yes	0.034 (2)	1.6E-03	5.6E-03	1.1E-03	4.5E-03	2.7E-03	0.010
Benzene	71-43-2	Yes	Yes	Yes	0.19 (2)	8.7E-03	0.031	6.1E-03	0.025	0.015	0.055
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.22 (2)	0.010	0.036	7.2E-03	0.029	0.017	0.064
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.011 (2)	5.1E-04	1.8E-03	3.6E-04	1.4E-03	8.7E-04	3.2E-03
Formaldehyde	50-00-0	Yes	Yes	Yes	1.73 (2)	0.081	0.28	0.057	0.23	0.14	0.51
Hexane	110-54-3	Yes	Yes	Yes	0.027 (2)	1.3E-03	4.4E-03	8.9E-04	3.6E-03	2.1E-03	8.0E-03
Toluene	108-88-3	Yes	Yes	Yes	0.11 (2)	4.9E-03	0.017	3.5E-03	0.014	8.4E-03	0.031
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.042 (2)	2.0E-03	6.9E-03	1.4E-03	5.6E-03	3.4E-03	0.013
Inorganic Compounds											
Ammonia	7664-41-7	Yes	No	Yes	0.80 (3)	0.037	0.13	0.026	0.11	0.064	0.24
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.19 (2)	8.7E-03	0.031	6.1E-03	0.025	0.015	0.055
Polycyclic Aromatic Hydrocarbons (PAH)											
PAHs	401	Yes	Yes	Yes	0.036 (2)	1.7E-03	5.9E-03	1.2E-03	4.8E-03	2.9E-03	0.011
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	3.6E-05 (2)	1.7E-06	5.8E-06	1.2E-06	4.7E-06	2.8E-06	1.1E-05
Naphthalene	91-20-3	Yes	Yes	Yes	0.020 (2)	9.2E-04	3.2E-03	6.5E-04	2.6E-03	1.6E-03	5.8E-03
DIESEL PARTICULATE MATTER (DPM)											
DPM	200	Yes	No	Yes	33.5 (2)	1.57	5.49	1.11	4.42	2.67	9.91

NOTES:

HAP = hazardous air pollutant

Mgal = thousand gallons.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (daily fuel consumption [gal/day])

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (annual fuel consumption [gal/yr])

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) DEQ approved diesel combustion emission factors for stationary and portable internal combustion engines.

(3) Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory published by the South Coast Air Quality Management District (SCAQMD) in December 2016. See Appendix B, Table B-2 "Default EF for Diesel/Distillate Oil Fuel Combustion (lb/1000 gal)" for stationary and portable internal combustion engines (ICE). Assumes no control.

Table 29
Facility Natural Gas Usage TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Glass Plant - Excluding Forehearth	Forehearth	Non-Production
Daily Fuel Usage (MMscf/day) (1)	2.37	0.11	0.062
Annual Fuel Usage (MMscf/yr) (1)	376	15.3	9.77

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/MMscf)	Emissions Estimates						Total Facility Emissions Estimates	
						Glass Plant - Excluding Forehearth		Forehearth		Non-Production			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (a) (lb/day)	Annual (b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals													
Arsenic	7440-38-2	Yes	Yes	Yes	2.0E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.2E-05	2.0E-03	1.2E-05	2.0E-03
Barium	7440-39-3	Yes	No	No	4.4E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	2.7E-04	0.043	2.7E-04	0.043
Beryllium	7440-41-7	Yes	Yes	Yes	1.2E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	7.4E-07	1.2E-04	7.4E-07	1.2E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.1E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	6.8E-05	0.011	6.8E-05	0.011
Chromium (total)	7440-47-3	No	Yes	No	1.4E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	8.7E-05	0.014	8.7E-05	0.014
Chromium VI	18540-29-9	Yes	Yes	Yes	5.6E-05 (c)	-- (2)	-- (2)	-- (3)	-- (3)	3.5E-06	5.5E-04	3.5E-06	5.5E-04
Cobalt	7440-48-4	Yes	Yes	Yes	8.4E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	5.2E-06	8.2E-04	5.2E-06	8.2E-04
Copper	7440-50-8	Yes	No	Yes	8.5E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	5.3E-05	8.3E-03	5.3E-05	8.3E-03
Lead	7439-92-1	Yes	Yes	Yes	5.0E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	3.1E-05	4.9E-03	3.1E-05	4.9E-03
Manganese	7439-96-5	Yes	Yes	Yes	3.8E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	2.4E-05	3.7E-03	2.4E-05	3.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-04 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.6E-05	2.5E-03	1.6E-05	2.5E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	1.7E-03 (4)	3.9E-03 (a)	0.62 (b)	1.7E-04 (a)	0.025 (b)	1.0E-04	0.016	4.2E-03	0.66
Nickel	7440-02-0	Yes	Yes	Yes	2.1E-03 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.3E-04	0.021	1.3E-04	0.021
Selenium	7782-49-2	Yes	Yes	Yes	2.4E-05 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.5E-06	2.3E-04	1.5E-06	2.3E-04
Vanadium	7440-62-2	Yes	No	Yes	2.3E-03 (4)	5.5E-03 (a)	0.86 (b)	2.4E-04 (a)	0.035 (b)	1.4E-04	0.022	5.8E-03	0.92
Zinc	7440-66-6	Yes	No	No	0.029 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.8E-03	0.28	1.8E-03	0.28
Inorganic Compounds													
Ammonia	7664-41-7	Yes	No	Yes	3.20 (6)	7.60 (a)	1,202 (b)	0.34 (a)	48.9 (b)	0.20	31.3	8.13	1,282
Organic Compounds													
Acetaldehyde	75-07-0	Yes	Yes	Yes	4.3E-03 (4)	0.010 (a)	1.62 (b)	4.5E-04 (a)	0.066 (b)	2.7E-04	0.042	0.011	1.72
Acrolein	107-02-8	Yes	Yes	Yes	2.7E-03 (4)	6.4E-03 (a)	1.01 (b)	2.8E-04 (a)	0.041 (b)	1.7E-04	0.026	6.9E-03	1.08
Benzene	71-43-2	Yes	Yes	Yes	8.0E-03 (4)	-- (2)	-- (2)	8.4E-04 (a)	0.12 (b)	5.0E-04	0.078	1.3E-03	0.20
Ethylbenzene	100-41-4	Yes	Yes	Yes	9.5E-03 (4)	-- (2)	-- (2)	1.0E-03 (a)	0.15 (b)	5.9E-04	0.093	1.6E-03	0.24
Formaldehyde	50-00-0	Yes	Yes	Yes	0.017 (4)	-- (2)	-- (2)	-- (3)	-- (3)	1.1E-03	0.17	1.1E-03	0.17
Hexane	110-54-3	Yes	Yes	Yes	6.3E-03 (4)	-- (2)	-- (2)	6.6E-04 (a)	0.096 (b)	3.9E-04	0.062	1.1E-03	0.16
Toluene	108-88-3	Yes	Yes	Yes	0.037 (4)	-- (2)	-- (2)	3.9E-03 (a)	0.56 (b)	2.3E-03	0.36	6.1E-03	0.92
Xylenes	1330-20-7	Yes	Yes	Yes	0.027 (4)	-- (2)	-- (2)	2.9E-03 (a)	0.42 (b)	1.7E-03	0.27	4.5E-03	0.68
Polycyclic Aromatic Hydrocarbons (PAHs)													
PAHs	401	Yes	Yes	Yes	1.0E-04 (4)	2.4E-04 (a)	0.038 (b)	1.1E-05 (a)	1.5E-03 (b)	6.2E-06	9.8E-04	2.5E-04	0.040
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.2E-06 (4)	2.8E-06 (a)	4.5E-04 (b)	1.3E-07 (a)	1.8E-05 (b)	7.4E-08	1.2E-05	3.1E-06	4.8E-04
Naphthalene	91-20-3	Yes	Yes	Yes	3.0E-04 (4)	7.1E-04 (a)	0.11 (b)	3.2E-05 (a)	4.6E-03 (b)	1.9E-05	2.9E-03	7.6E-04	0.12

NOTES:

HAP = hazardous air pollutant

MMscf = million standard cubic feet.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emission estimates (lb/day) = (emission factor [lb/MMscf]) x (daily fuel usage [MMscf/day])

(b) Annual emission estimates (lb/yr) = (emission factor [lb/MMscf]) x (annual fuel usage [MMscf/yr])

(c) Chromium VI emission factor (lb/MMscf) = (chromium emission factor [lb/MMscf]) x (chromium VI percentage of total chromium [%]) /100

Chromium VI percentage of total chromium (%) = 4.00 (5)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Source-specific emissions calculated in Table 18, Glass Plant TAC Emission Estimates - 2021. Emissions of this pollutant are included with the emission estimates for the production-based TEU emission factors.

(3) Source-specific emissions calculated in Table 18, Glass Plant TAC Emission Estimates - 2021. Emissions of this pollutant are included with the emission estimates for the glass melt TEU emission factors.

(4) Emission factors provided by Oregon Department of Environmental Quality for Natural Gas External Combustion Sources. Emission factors for sources <10 MMBtu/hr were used.

(5) Based on assumptions used by the EPA as outlined in the 2011 National Emissions Inventory. EPA assumes that 4% of chromium emitted during natural gas combustion is in the form of hexavalent chromium.

(6) EPA Webfire Clearinghouse for Inventories and Emission Factors. Assumes uncontrolled natural gas combustion.

Table 30
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate							
					Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt Operations	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals												
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	2.6E-03	0.32	7.0E-04	0.19	2.3E-04	0.029
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	3.0E-04	0.062	1.6E-03	0.20	4.7E-04	0.13	1.6E-04	0.020
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	1.6E-03	0.21	1.3E-04	0.036	1.9E-04	0.024
Chromium (total)	7440-47-3	No	Yes	No	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010
Chromium VI	18540-29-9	Yes	Yes	Yes	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	6.7E-05	8.4E-03	--	--	3.5E-05	4.3E-03
Copper	7440-50-8	Yes	No	Yes	2.5E-03	0.53	9.1E-03	1.14	2.1E-03	0.59	1.3E-03	0.16
Lead	7439-92-1	Yes	Yes	Yes	--	--	0.014	1.82	--	--	1.7E-03	0.21
Manganese	7439-96-5	Yes	Yes	Yes	5.0E-04	0.10	2.3E-03	0.29	4.9E-04	0.13	4.6E-05	5.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-05	5.4E-03	1.7E-04	0.022	2.4E-05	6.7E-03	0.023	2.90
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	2.2E-04	0.046	3.5E-03	0.44	8.1E-04	0.22	--	--
Phosphorus	504	Yes	Yes	No	4.1E-03	0.87	0.041	5.17	4.0E-03	1.10	5.0E-03	0.62
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	6.2E-03	1.29	0.026	3.24	0.013	3.54	2.6E-03	0.33
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--
Inorganic Compounds												
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	2.5E-03	0.31
Fluorides	239	Yes	No	Yes	--	--	0.29	37.1	7.8E-03	2.14	8.9E-03	1.11
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.19	39.3	0.034	4.31	0.10	28.7	1.3E-03	0.16
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	0.029	6.11	0.086	10.8	0.022	6.18	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--
Silica, crystalline	7631-86-9	Yes	No	Yes	--	--	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--
Organic Compounds												
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	0.28	59.6	0.92	115	0.93	256	0.36	44.3
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	0.056	11.8	0.20	25.5	0.23	64.2	0.085	10.6
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	0.011	1.33	--	--	0.038	4.68
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	0.014	3.95	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	0.042	5.32	0.012	3.36	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	6.6E-03	1.81	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	4.45	935	3.10	390	1.00	276	0.19	23.4
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	0.28	58.3	0.78	98.5	1.35	371	0.051	6.37
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	0.022	4.60	--	--	0.088	24.2	--	--
2-Butanone	78-93-3	Yes	No	Yes	0.011	2.25	0.037	4.70	0.030	8.14	4.7E-03	0.58
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	0.011	2.96	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	0.13	28.1	0.60	75.7	0.24	64.7	0.021	2.65
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	0.10	12.6	0.025	6.95	--	--
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	0.048	5.98	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)												
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)												
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--
Total TACs					**5.46**	**1,148**	**6.36**	**801**	**4.10**	**1,127**	**0.79**	**98.5**
Total HAPs					**5.13**	**1,078**	**4.99**	**628**	**3.08**	**846**	**0.42**	**52.0**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 30
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					CFUs		CFU Super Sack Filling		Bailing Fugitives		Bulking Agent Silos		Raw Material Handling	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals														
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	--	--	0.20	60.0
Antimony	7440-36-0	Yes	Yes	Yes	--	--	3.1E-05	8.0E-03	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	--	--	2.2E-05	5.6E-03	--	--	--	--	0.031	9.47
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	2.0E-05	5.2E-03	--	--	--	--	2.0E-06	6.2E-04
Chromium (total)	7440-47-3	No	Yes	No	--	--	1.4E-05	3.7E-03	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	1.4E-05	3.7E-03	--	--	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	2.1E-06	5.5E-04	--	--	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	1.4E-04	0.036	--	--	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	--	--	1.7E-04	0.044	--	--	--	--	2.0E-05	6.2E-03
Manganese	7439-96-5	Yes	Yes	Yes	--	--	2.1E-05	5.4E-03	--	--	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	--	--	1.2E-03	0.30	--	--	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	2.6E-05	6.8E-03	--	--	--	--	--	--
Phosphorus	504	Yes	Yes	No	--	--	5.3E-04	0.14	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	3.9E-04	0.10	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	0.020	6.00
Inorganic Compounds														
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	2.2E-03	0.57	--	--	--	--	0.015	4.51
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	2.22	312	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Silica, crystalline	7631-86-9	Yes	No	Yes	0.14	23.2	1.5E-03	0.40	--	--	1.5E-04	6.0E-03	0.51	155
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Organic Compounds														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Total TACs					**0.14**	**23.2**	**6.3E-03**	**1.63**	**2.22**	**312**	**1.5E-04**	**6.0E-03**	**0.77**	**235**
Total HAPs					**0**	**0**	**2.0E-03**	**0.52**	**0**	**0**	**0**	**0**	**2.2E-05**	**6.8E-03**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 30
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate							
					Raw Material Handling - Off Specification		Cooling Towers					
							Circulation Drift		Material Balance		Total	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals												
Aluminum	7429-90-5	Yes	No	Yes	4.8E-04	5.7E-03	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	7.6E-05	9.1E-04	--	--	--	--	--	--
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	5.0E-09	6.0E-08	--	--	--	--	--	--
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	--	--	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	5.0E-08	6.0E-07	--	--	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	4.9E-05	5.9E-04	--	--	--	--	--	--
Inorganic Compounds												
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	3.6E-05	4.4E-04	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	0.012	4.26	--	--	0.012	4.26
Silica, crystalline	7631-86-9	Yes	No	Yes	1.2E-03	0.015	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	0.012	4.26	--	--	0.012	4.26
Organic Compounds												
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	7.65	140	7.65	140
Hexane	110-54-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	0.085	1.55	0.085	1.55
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)												
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--
Diesel Particulate Matter (DPM)												
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--
Total TACs					**1.9E-03**	**0.022**	**0.023**	**8.52**	**7.74**	**141**	**7.76**	**150**
Total HAPs					**5.5E-08**	**6.6E-07**	**0**	**0**	**0.085**	**1.55**	**0.085**	**1.55**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 30
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate					
					Shipping and Receiving - Paint Usage		Emergency Generators			
							Line 1		Line 2	
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals										
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	7.5E-05	2.6E-04	5.3E-05	2.1E-04
Barium	7440-39-3	Yes	No	No	0.023	5.39	--	--	--	--
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	7.0E-05	2.5E-04	5.0E-05	2.0E-04
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	4.7E-06	1.6E-05	3.3E-06	1.3E-05
Cobalt	7440-48-4	Yes	Yes	Yes	7.5E-04	0.26	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	1.9E-04	6.7E-04	1.4E-04	5.4E-04
Lead	7439-92-1	Yes	Yes	Yes	--	--	3.9E-04	1.4E-03	2.7E-04	1.1E-03
Manganese	7439-96-5	Yes	Yes	Yes	--	--	1.5E-04	5.1E-04	1.0E-04	4.1E-04
Mercury	7439-97-6	Yes	Yes	Yes	--	--	9.4E-05	3.3E-04	6.6E-05	2.6E-04
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	1.8E-04	6.4E-04	1.3E-04	5.1E-04
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	1.0E-04	3.6E-04	7.3E-05	2.9E-04
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--
Inorganic Compounds										
Ammonia	7664-41-7	Yes	No	Yes	--	--	0.037	0.13	0.026	0.11
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	8.7E-03	0.031	6.1E-03	0.025
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--
Silica, crystalline	7631-86-9	Yes	No	Yes	--	--	--	--	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--
Organic Compounds										
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	0.037	0.13	0.026	0.10
Acetone	67-64-1	Yes	No	Yes	0.36	89.6	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	1.6E-03	5.6E-03	1.1E-03	4.5E-03
Benzene	71-43-2	Yes	Yes	Yes	--	--	8.7E-03	0.031	6.1E-03	0.025
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	0.010	0.036	7.2E-03	0.029
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.018	3.76	5.1E-04	1.8E-03	3.6E-04	1.4E-03
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	0.081	0.28	0.057	0.23
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	--	--	1.3E-03	4.4E-03	8.9E-04	3.6E-03
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	0.014	4.79	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	--	--	4.9E-03	0.017	3.5E-03	0.014
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.063	15.4	2.0E-03	6.9E-03	1.4E-03	5.6E-03
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)										
PAHs	401	Yes	Yes	Yes	--	--	1.7E-03	5.9E-03	1.2E-03	4.8E-03
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	--	--	1.7E-06	5.8E-06	1.2E-06	4.7E-06
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	9.2E-04	3.2E-03	6.5E-04	2.6E-03
Diesel Particulate Matter (DPM)										
DPM	200	Yes	No	Yes	--	--	1.57	5.49	1.11	4.42
Total TACs					**0.48**	**119**	**1.76**	**6.18**	**1.24**	**4.98**
Total HAPs					**0.081**	**19.4**	**0.16**	**0.56**	**0.11**	**0.45**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.

Table 30
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate						Total Facility Emissions Estimate	
					Natural Gas Combustion							
					Glass Plant - Excluding Forehearth		Forehearth		Non-Production			
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals												
Aluminum	7429-90-5	Yes	No	Yes	--	--	--	--	--	--	0.20	60.0
Antimony	7440-36-0	Yes	Yes	Yes	(1)	(1)	(1)	(1)	--	--	3.5E-03	0.55
Arsenic	7440-38-2	Yes	Yes	Yes	(1)	(1)	(1)	(1)	1.2E-05	2.0E-03	1.4E-04	2.4E-03
Barium	7440-39-3	Yes	No	No	(1)	(1)	(1)	(1)	2.7E-04	0.043	0.057	15.3
Beryllium	7440-41-7	Yes	Yes	Yes	(1)	(1)	(1)	(1)	7.4E-07	1.2E-04	7.4E-07	1.2E-04
Cadmium	7440-43-9	Yes	Yes	Yes	(1)	(1)	(1)	(1)	6.8E-05	0.011	2.2E-03	0.28
Chromium (total)	7440-47-3	No	Yes	No	(1)	(1)	(1)	(1)	8.7E-05	0.014	2.0E-03	0.28
Chromium VI	18540-29-9	Yes	Yes	Yes	(1)	(1)	(1)	(1)	3.5E-06	5.5E-04	1.9E-03	0.27
Cobalt	7440-48-4	Yes	Yes	Yes	(1)	(1)	(1)	(1)	5.2E-06	8.2E-04	8.6E-04	0.27
Copper	7440-50-8	Yes	No	Yes	(1)	(1)	(1)	(1)	5.3E-05	8.3E-03	0.015	2.46
Lead	7439-92-1	Yes	Yes	Yes	(1)	(1)	(1)	(1)	3.1E-05	4.9E-03	0.017	2.09
Manganese	7439-96-5	Yes	Yes	Yes	(1)	(1)	(1)	(1)	2.4E-05	3.7E-03	3.6E-03	0.54
Mercury	7439-97-6	Yes	Yes	Yes	(1)	(1)	(1)	(1)	1.6E-05	2.5E-03	0.025	3.24
Molybdenum trioxide	1313-27-5	Yes	No	No	3.9E-03	0.62	1.7E-04	0.025	1.0E-04	0.016	4.2E-03	0.66
Nickel	7440-02-0	Yes	Yes	Yes	(1)	(1)	(1)	(1)	1.3E-04	0.021	5.0E-03	0.73
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	0.055	7.90
Selenium	7782-49-2	Yes	Yes	Yes	(1)	(1)	(1)	(1)	1.5E-06	2.3E-04	1.8E-04	8.9E-04
Vanadium	7440-62-2	Yes	No	Yes	5.5E-03	0.86	2.4E-04	0.035	1.4E-04	0.022	5.8E-03	0.92
Zinc	7440-66-6	Yes	No	No	(1)	(1)	(1)	(1)	1.8E-03	0.28	0.050	8.78
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	0.020	6.00
Inorganic Compounds												
Ammonia	7664-41-7	Yes	No	Yes	7.60	1,202	0.34	48.9	0.20	31.3	8.20	1,283
Carbon disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	2.5E-03	0.31
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	0.33	45.5
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	0.33	72.5
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	0.015	0.055
Glasswool Fibers	352	Yes	No	No	--	--	--	--	--	--	2.36	335
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	0.012	4.26
Silica, crystalline	7631-86-9	Yes	No	Yes	--	--	--	--	--	--	0.65	178
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	0.012	4.26
Organic Compounds												
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.010	1.62	4.5E-04	0.066	2.7E-04	0.042	0.073	1.96
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	2.85	565
Acrolein	107-02-8	Yes	Yes	Yes	6.4E-03	1.01	2.8E-04	0.041	1.7E-04	0.026	9.6E-03	1.09
Benzene	71-43-2	Yes	Yes	Yes	(1)	(1)	8.4E-04	0.12	5.0E-04	0.078	0.59	112
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	0.065	6.07
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	0.014	3.95
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	1.0E-03	0.15	5.9E-04	0.093	0.074	12.7
Chloroethane	75-00-3	Yes	Yes	Yes	(1)	(1)	(1)	(1)	--	--	6.6E-03	1.81
Formaldehyde	50-00-0	Yes	Yes	Yes	(1)	(1)	(1)	(1)	1.1E-03	0.17	8.88	1,626
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--	7.65	140
Hexane	110-54-3	Yes	Yes	Yes	(1)	(1)	6.6E-04	0.096	3.9E-04	0.062	2.46	535
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--	0.085	1.55
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	0.11	28.8
2-Butanone	78-93-3	Yes	No	Yes	--	--	--	--	--	--	0.082	15.7
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	0.011	2.96
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	0.014	4.79
Toluene	108-88-3	Yes	Yes	Yes	(1)	(1)	3.9E-03	0.56	2.3E-03	0.36	1.01	172
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	2.9E-03	0.42	1.7E-03	0.27	0.20	35.6
o-Xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	0.048	5.98
Polycyclic Aromatic Hydrocarbons (PAH)												
PAHs	401	Yes	Yes	Yes	2.4E-04	0.038	1.1E-05	1.5E-03	6.2E-06	9.8E-04	3.1E-03	0.051
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	2.8E-06	4.5E-04	1.3E-07	1.8E-05	7.4E-08	1.2E-05	5.9E-06	4.9E-04
Naphthalene	91-20-3	Yes	Yes	Yes	7.1E-04	0.11	3.2E-05	4.6E-03	1.9E-05	2.9E-03	2.3E-03	0.13
Diesel Particulate Matter (DPM)												
DPM	200	Yes	No	Yes	--	--	--	--	--	--	2.67	9.91
Total TACs					**7.63**	**1,207**	**0.35**	**50.5**	**0.21**	**32.8**	**39.3**	**5,316**
Total HAPs					**0.018**	**2.78**	**1.0E-02**	**1.45**	**7.3E-03**	**1.15**	**14.1**	**2,633**

REFERENCES:

(1) Emissions of this TAC are included with the emission estimates for the production-based TEU emission factors.