

Source 04 - WFE

Emission Source (a)	Emission Factor (lb VOC/ton EtOH produced)	Throughput (tons EtOH produced/year) (b)	Potential VOC Emissions			Average VOC Emissions (c)		
			lb/yr	lb/hr	TPY	lb/yr	lb/hr	TPY
Storage Tank Vent (Finished EtOH)	0.02	6,057.80	121.16	0.01	0.04	82.32	0.01	0.04
Storage Tank Vent (Feedstock)	0.02	13,461.78	269.24	0.03	0.13	182.94	0.02	0.09
Condenser Vent	3.3	6,057.80	19,990.74	2.28	9.99	13,583.62	1.55	6.79
Fugitive Leak Emissions	(on Leak Source Sheet)	6,057.80	2,137.40	0.24	1.05	1,452.35	0.17	0.74
Fugitive Loading Emissions	0.72	5,476.92	3,943.38	0.45	1.97	2,679.51	0.31	1.36
Project Total			26,461.91	3.02	13.23	17,980.75	2.05	8.98

(a) Emissions sources and Factors are from EPA AP-42 Chapter 4.7, Table 4.7-1.

(b) throughput calculated using the following assumptions:

WFE Design capacity (d)	210	gal/hr	1,383.06	lb/hr
Ethanol Density (e)	6.586	lb/gal		
Operating days / calendar year	330	days/yr		
Hours/day	24	hr/day		
Annual Operating Hours	7920	hr/yr		
Max Annual Operating Hours	8760	hr/yr		
Feedstock EtOH concentration	45%	estimate on avg for EtOH		

(d) Design capacity provided by Dynamic Recycling and is expressed in terms of maximum ethanol production rate (gallons per hour [gph]).

(c) Average VOC emissions calculated based on:

Average Evaporator EtOH Yield	1,250,000	gal/yr
Percent Average Yield to Design Capacity (h)	68%	

(h) Percentage of hourly capacity (based on 8,760 hours per year and the average evaporator ethanol yield) to WFE design capacity of 685 gph.

Equipment/Service Component	Quantity of Component in Project (j)	Emission Factor ([lb/hr]/Component) (k)	VOC Emissions		
			lb/yr	lb/hr	ton/yr
Valves	80	3.60E-04	252.29	0.03	0.13
Pumps	3	4.10E-03	107.75	0.01	0.05
Flanges/Connectors	24	1.80E-04	37.84	4.32E-03	0.02
Relief Valves	2	9.86E-02	1,727.47	0.20	0.86
Sampling Events	365	3.30E-02	12.05	1.38E-03	0.01
Total Hourly Fugitive Leak Emissions:			2,137.40	0.24	1.07

(j) from facility's P&ID

(k) Emissions factors from Texas Commission on Environmental Quality (TCEQ), New Source Review document

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/socmi.pdf>. Emissions factors derived from the Uncontrolled Synthetic Organic Chemical Manufacturing Industry (SOCMI) Fugitive Emissions Factor for Light Liquid, EPA Document, EPA-453/R-95-017, November 1995, Page 2-12.