

INTERNAL FLOATING ROOF TANK TANK ID NO. 4

Equilon Enterprises Hilo Terminal

Roof Type (Internal, External) = **Internal**
 CAPACITY (bbl)= 5,500 CAPACITY (gal)= **231,000**
 TANK DIAMETER (ft)= **36** FUEL TYPE= **UNLEADED PREM**
 TANK HEIGHT (ft)= **30** VMW (lb/lb-mole)= **66**
 LIQUID HEIGHT (ft)= 30.34 DISTILLATION SLOPE= **3**
 THROUGHPUT (bbl/yr)= **1,476,190** RVP= **11.500**
 TURNOVERS= 268

PAINT ABSORPTANCE (pg. 7.1-61) = **0.170**
 INSULATION FACTOR (pg. 7.1-64) = 1,639
 AVG. WIND SPEED (pg. 7.1-74, below)= **7.20**

Hilo 7.20
 Honolulu 11.40
 Kahului 12.80
 Lihue 12.20

$L_T = L_R + L_{WD} + L_F + L_D =$

$L_R = \text{rim seal loss} = (K_{Ra} + K_{Rb}V^n)DP^*M_VK_C = 832$

K_{Ra} (table 7.1-8, pg. 7.1-73) = **1.6**

K_{Rb} (table 7.1-8, pg. 7.1-73) = **0.3**

n (table 7.1-8, pg. 7.1-73) = **1.5**

v (note 1, pg.7.1-21) = 0.00

P^* (vapor pres. function) = 0.219

K_C (page7.1-21)= 1.00

A= 11.7

B= 5,134

T_{AA} = 536.95

T_B = 536.97

P_{VA} = 8.661

T_{LA} = 539.162

$L_{WD} = \text{withdrawal loss} = \{(0.943QCW_L/D)\}[1+(N_C F_C/D)] = 334$

C (table 7.1-10, pg. 7.1-78) = **0.0015**

W_L (tables 7.1-2 & 3, pg. 7.1-53) = **5.60**

N_C (note 2, pg. 7.1-22) = **1**

F_C (note 3, pg. 7.1-21) = **1**

$L_F = \text{deck fitting loss} = F_F P^* M_V K_C = 4935$

F_F (table 7.1-12)= 341.70

$L_D = \text{deck seam loss} = K_D S_D D^2 P^* M_V K_C = 0$

K_D (0 for welded, else 0.14 pg. 7.1-24) = **0.00**

Total length of deck seam (ft)= **0**

S_D (pg. 7.1-25)= 0.000

$L_T =$ **3.1 T/yr VOC**

HAPs	CAS #	Vapor Mass Fraction	Emissions (lb/yr)
BENZENE	71432	0.0041	25.01
NAPHTHALENE	91203	0.0000	0.00
o-XYLENE	101414	0.0006	3.66
ETHYLBENZENE	95476	0.0006	3.66
p-XYLENE	106423	0.0008	4.88
m-XYLENE	108383	0.0010	6.10
TOLUENE	108883	0.0064	39.04
CUMENE	98828	0.0000	0.00

Total HAPs (lb/yr) 82.4

Total HAPs (TPY) 0.04

Deck Fitting Loss	QTY	K_F	Deck Fitting Loss	QTY	K_F
<u>Access hatch (24" dia)</u>			<u>Gauge-hatch/sample port</u>		
bolted cover, gasket		0.00	Weighted mechanical, gasket		0.00
unbolted cover, gasket		0.00	Weighted mechanical, ungasket		0.00
unbolted cover, no gasket	1	36.00	Slit fabric seal, 10% open area	1	12.00
<u>Fixed roof support column well</u>			<u>Vacuum breaker</u>		
Round pipe, ungasketed sliding cover		0.00	Weighted mechanical, ungasketed		0.00
Round pipe, gasketed sliding cover		0.00	Weighted mechanical, gasketed	1	6.20
Round pipe, flex fabric sleeve seal		0.00	<u>Deck drain (3" dia.)</u>		
Built-up col., ungasketed sliding cover	1	47.00	Open		0.00
Built-up col., gasketed sliding cover		0.00	90% closed		0.00
<u>Unslotted guide-pole and well</u>			<u>Stub drain</u>	19	22.80
Ungasketed sliding cover		0.00	<u>Deck leg</u>		
Ungasketed sliding cover w/ pole sleeve		0.00	Adjustable, internal floating	13	102.70
Gasketed sliding cover	1	25.00	Adjustable, pontoon area, ungasketed		0.00
Gasketed sliding cover w/pole wiper		0.00	Adjustable, pontoon area, gasketed		0.00
Gasketed sliding cover w/pole sleeve		0.00	Adjustable, pontoon area, sock		0.00
<u>Slotted guide-pole/sample well</u>			Adjustable, center area, ungasketed		0.00
Ungasketed or gasketed sliding cover		0.00	Adjustable, center area, gasketed		0.00
Ungasketed or gasketed sliding cover w/float		0.00	Adjustable, center area, sock		0.00
Gasketed sliding cover w/pole wiper		0.00	Adjustable, double deck roofs		0.00
Gasketed sliding cover w/pole sleeve		0.00	<u>Rim vent</u>		
Gasketed sliding cover w/float & pole wiper		0.00	Weighted mechanical, ungasketed		0.00
Gasketed sliding cover w/float, wiper & sleeve		0.00	Weighted mechanical, gasketed		0.00
<u>Automatic gauge float well</u>			<u>Ladder well</u>		
unbolted cover, ungasketed	1	14.00	Sliding cover, ungasketed	1	76.00
unbolted cover, gasket		0.00	Sliding cover, gasketed		0.00
bolted cover, gasket		0.00			
			TOTAL		341.70