E17 - ENGINES, NATURAL GAS FIRED, 4 STROKE, LEAN BURN, WITH CATALYTIC OXIDATION

CALCULATION METHODS

Ea = Ua x EF (lbs/mmft3)

Eh = Uh (scfm) x (60/1000000) x EF (lbs/mmft3)

NOTES:

- Catalytic oxidation can achieve efficiencies of approximately 90% in reducing of CO, ROG, TOG, and AB2588 toxic organic compounds.

- The trace organic factors listed below are based on detected AB 2588 compounds listed in AP-42 Table 3.2-2 (7/00).

- The AP-42 (7/00) emission factors have been converted into lbs/mmscf by assuming a natural gas BTU content of 1020 BTU/scf.

- PM10 and TSP emission factors include filterable and condensable PM in accordance with the District's definition of particulate matter.

- The listed AP-42 emission factors for 1,1,2-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,2-dichloropropane, 1,3-dichloropropene, carbon tetrachloride, chloroform, ethylene dibromide, styrene, and vinyl chloride are NOT included since these values are based on nondetectable test results.

- The listed AP-42 emission factors for 1,1,2,2-tetrachloroethane, 1,2,4-trimethylbenzene, 2,2,4-trimethylpentane, 2-methylnaphthalene, acenaphthalene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, biphenyl, chlorobenzene, chrysene, cyclohexane, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, perylene, phenanthrene, and pyrene are NOT included since these values were based on insignificant and/or nondetectable test results.

- Trace metal emission factors were not reported in AP-42 and are NOT included since natural gas fired engines are not expected to emit metals.

- The AP-42 emission factors for 1,2,3-trimethylbenzene, 1,3,5-trimethylpentane, butane, butyr/isobutyraldehyde, cyclopentane, ethane, isobutane, methylcyclohexane, n-nonane, n-octane, n-pentane, and propane are not included since these are not listed toxic air contaminants.

- The AP-42 acrolein emission factor is NOT included since this value is based on test data and detection limits from incorrect sampling methods. A District factor based on local test results and adjusted for equipment VOC controls is considered more accurate than the AP-42 value.

Pollutant	District Emission Factor (lbs/million ft3 fuel burned)	EPA Reference Document	EPA Factor	Units	Comments
NOx	4161.60	AP-42, Sect 3.2, 7/00, Table 3.2-2	4.08E+00	lbs/MMBTU	
CO	32.33	AP-42, Sect 3.2, 7/00, Table 3.2-2	3.17E-01	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
SOx	0.60	AP-42, Sect 3.2, 7/00, Table 3.2-2	5.88E-04	lbs/MMBTU	Assume a sulfur content of 0.05% and a fuel density of 7 lbs/gal
TOG	149.94	AP-42, Sect 3.2, 7/00, Table 3.2-2	1.47E+00	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
ROG	12.04	AP-42, Sect 3.2, 7/00, Table 3.2-2	1.18E-01	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
TSP	10.19	AP-42, Sect 3.2, 7/00, Table 3.2-2	9.99E-03	lbs/MMBTU	TSP includes filterable (7.71 E-05) and condensable (9.91 E-03) PM.
PM10	10.19	AP-42, Sect 3.2, 7/00, Table 3.2-2	9.99E-03	lbs/MMBTU	PM10 includes filterable (7.71 E-05) and condensable (9.91 E-03) PM.
1,3-Butadiene	0.03	AP-42, Sect 3.2, 7/00, Table 3.2-2	2.67E-04	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Acetaldehyde	0.85	AP-42, Sect 3.2, 7/00, Table 3.2-2	8.36E-03	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Acrolein	0.01	AP-42, Sect 3.2, 7/00, Table 3.2-2	5.14E-03	lbs/MMBTU	District emission factor based on SDAPCD source test results.

Benzene	0.04	AP-42, Sect 3.2, 7/00, Table 3.2-2	4.40E-04	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Ethylbenzene	0.004	AP-42, Sect 3.2, 7/00, Table 3.2-2	3.97E-05	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Formaldehyde	5.39	AP-42, Sect 3.2, 7/00, Table 3.2-2	5.28E-02	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Hexane	0.11	AP-42, Sect 3.2, 7/00, Table 3.2-2	1.11E-03	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Methanol	0.26	AP-42, Sect 3.2, 7/00, Table 3.2-2	2.50E-03	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Methylene Chloride	0.002	AP-42, Sect 3.2, 7/00, Table 3.2-2	2.00E-05	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Naphthalene	0.01	AP-42, Sect 3.2, 7/00, Table 3.2-2	7.44E-05	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
PAH	0.003	AP-42, Sect 3.2, 7/00, Table 3.2-2	2.69E-05	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Phenol	0.002	AP-42, Sect 3.2, 7/00, Table 3.2-2	2.40E-05	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Toluene	0.04	AP-42, Sect 3.2, 7/00, Table 3.2-2	4.08E-04	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2
Xylenes	0.02	AP-42, Sect 3.2, 7/00, Table 3.2-2	1.84E-04	lbs/MMBTU	Catalytic oxidation 90% control of value shown in Table 3.2-2

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