



# Form B2 - Permitted Emissions From Fuel Combustion - Internal Combustion Engines & Turbines

**Note 1:** DO NOT report fuel and emissions from on-road, off-road, or in-plant mobile source vehicles (i.e., self-propelled vehicles) such as forklifts.

**Note 2:** DO NOT report RECLAIM NOx and SOx emissions on this form. Instead use Form CR. Please refer to the General Instruction Book under Frequently Asked Questions for guidance on reporting either RECLAIM or non-RECLAIM emissions. Report all permitted cogeneration or resource recovery fuel usage on Form E1.

**Note 3:** Emissions from SCAQMD-permitted portable equipment currently registered with the Statewide Portable Equipment Registration Program should be reported on this form only for the period prior to the issuance of the registration certificate by the California Air Resources Board. Refer to the General Instruction Book under Frequently Asked Questions for more details. Please provide a copy of the registration certificate.

**Note 4:** Fuel combustion results in toxics emissions. These toxics emissions must be reported on Form TAC.

**Facility Name and ID No.:** Please fill in your facility name and facility ID number in the designated spaces, exactly as indicated on Form X (Signature Sheet) in your package.

**Equipment (Eq.), Fuel Codes and Fuel Usage:** Fill in the appropriate equipment code in column (a), fuel code in column (b), and the fuel usage (for six-month: 7/1/07-12/31/07) in column (c). **Please use a separate row for each fuel/equipment combination and emission factor.** Select equipment code based on the size of your equipment. If you do not know the size of your equipment, use 10c for portable ICE and 11c for stationary ICE as defaults. If fuel usage is not measured separately (i.e., one common fuel meter for several equipments), use the equipment sizes or ratings (e.g., horse power, HP) to distribute fuel usage for each equipment type (see example for Form B2U in Appendix O of the General Instruction Book). **Please use proper units (i.e., mmscf for gaseous fuels and 1000 gallons for liquid fuels)** Do not report the fuel usage in hours. If the fuel usage is tracked by hours of operation, convert to fuel usage in requested units using manufacturer's data.

Eq. Code	Equipment Type-Portable Internal Combustion Engines (ICE)
10a	Portable ICE, 2 Stroke-Lean Burn
10b	Portable ICE, 2 Stroke-Lean Burn, with Catalyst
10c	Portable ICE, 4 Stroke-Lean Burn
10d	Portable ICE, 4 Stroke-Lean Burn, with Catalyst
10e	Portable ICE, 4 Stroke-Rich Burn
10f	Portable ICE, 4 Stroke-Rich Burn, with Catalyst

Eq. Code	Equipment Type-Stationary Internal Combustion Engines (ICE)
11a	Stationary ICE, 2 Stroke-Lean Burn
11b	Stationary ICE, 2 Stroke-Lean Burn, with Catalyst
11c	Stationary ICE, 4 Stroke-Lean Burn
11d	Stationary ICE, 4 Stroke-Lean Burn, with Catalyst
11e	Stationary ICE, 4 Stroke-Rich Burn
11f	Stationary ICE, 4 Stroke-Rich Burn, with Catalyst

Eq. Code	Equipment Type
12	Turbines
14	Micro Turbine

Fuel Code	Fuel Type
1	Natural Gas (mmscf)
2	LPG, Propane, Butane (1000 gals)
3	Diesel / Distillate Oil (1000 gals)
4	Gasoline (10 RVP) (1000 gals)
5	Landfill Gas (mmscf)
6	Digester Gas (mmscf)

Fuel Code	Fuel Type
7	Residual Fuel Oil (1000 gals)
8	Fuel Oil [0.05% S] (1000 gals)
9	Refinery Gas/Refinery Mixed Gas/Petroleum Process Gas (mmscf)
10	Jet Fuel (Jet-A and Jet-B) (1000 gals)
11	Compressed Natural Gas [CNG] (1000 gals)
12	Coal (tons)

Fuel Code	Fuel Type
13	Coke (tons)
14	Tire (tons)
15	Wood (tons)
16	Bio-Diesel (1000 gals)
17	Biomass Derived Gas (mmscf)
18	Methanol (1000 gals)

Fuel Code	Fuel Type
19	Kerosene (1000 gals)
20	Process Associated Gas (mmscf)
21	Municipal Solid Waste (tons)
22	Lignite (tons)
23	Bark (tons)
24	Spent Solvent (1000 gals)

**Emission Factors:** Write the appropriate emission factors for each fuel/equipment combination in the small box in the upper right-hand corner of every cell. Please use correct units for each of the factors (i.e., the emission factor for gaseous fuels should be in lbs/mmscf and for liquid fuels in lbs/1000 gallons). Use emission factors which most accurately reflect emissions from your equipment. You must use the available equipment-specific emission factors even if these factors are higher than the default emission factors, listed in Table 1 below. All emission factors (except default emission factors listed in Table 1) must be supported with documentation which should be attached to the completed report. Preference for use of emission factors should be in the following order:

- Continuous emissions monitoring (CEMS) data (if applicable). You must submit CEMS summary data.
- Source tests pre-approved by AQMD (if applicable). You must submit a copy of the source test results and supporting data.
- Rule or permit emission factors or Best Available Control Technologies (BACT) emission levels (if applicable). You must submit a list of equipment by rule and by permit number that comply with the rule or permit limit, or with the BACT levels. NOx emission factors for stationary IC engines subject to Rule 1110.2 are listed in Table 2, below.
- Other available data (e.g., manufacturer's data) with supporting documentation. Default emission factors that represent uncontrolled emissions are listed in Table 1, below. For emissions from turbines, use data from the Continuous Emission Monitoring System (CEMS), if available. Otherwise, use source test data or refer to EPA Document AP-42, Supplement F, Section 3.1 for appropriate emission factors. Default emission factors should only be used if no other emission factors are available.

**Emissions:** Calculate the emissions for each pollutant by multiplying the fuel usage by the emission factor for each pollutant using the appropriate units. Enter the calculated emissions in the corresponding cell for each pollutant.

**Subtotal Emissions:** If you use more than one Form B2, in the space provided indicate the page number and the total number of B2 Forms. For example, if you use 4 forms, indicate in the boxes - page 1 of 4, page 2 of 4, etc. Total the emissions for each column (on each page) and place the total on Line 1, Subtotal Emissions (lbs).

**Sum of Subtotals:** Complete Lines 2 and 3 only on the last page of Form B2. On Line 2 enter the sum of the subtotals from Line 1 of all B2 forms. To convert the totals to tons, divide the total in pounds by 2000, round to two (2) decimal places and enter the total emissions (tons) on Line 3. Transfer the totals (tons) to Form C, Line 2 in the respective columns.

**Table 1: Default emission factors For Internal Combustion Engines (ICE) and Micro Turbines**

Fuel	Organic Gases	Methane	Nitrogen Oxides	Sulfur Oxides	Carbon Monoxide	Particulate Matter
Natural gas (mmscf)-2 Stroke (Lean-Burn) ICE	122.00	1,479.00	3,233.00	0.60	394.00	39.00
Natural gas (mmscf)-4 Stroke (Lean-Burn) ICE & micro turbine	120.00	1,275.00	4,162.00	0.60	323.00	----
Natural gas (mmscf)-4 Stroke (Rich-Burn) ICE	30.00	235.00	2,254.00	0.60	3,794.00	10.00
LPG, Propane, Butane (1000 gallons) All size ICE and Micro Turbine	83.00	----	139.00	0.35	129.00	5.00
Diesel / Distillate Oil (1000 gallons) All size ICE and Micro Turbine	37.50	----	469.00	7.10	102.00	33.50
Gasoline (1000 gallons) All size ICE and Micro Turbine	206.00	----	102.00	5.30	3,940.00	6.50

**Table 2: Rule 1110.2 Compliant Emission Factors (Stationary ICE)**

Fuel	Nitrogen Oxides
Natural gas (mmscf)	238.70
LPG, Propane, Butane (1000 gallons)	15.30
Diesel / Distillate Oil (1000 gallons)	33.40
Gasoline (1000 gallons)	21.50