| California Environmental Protection Agency AIR RESOURCES BOARD | IMPCO TECHNOLOGIES, INC. | EXECUTIVE ORDER U-L-006-0051 New Off-Road Large Spark-Ignition Engines At & Above 19 Kilowatts |
|---|---|---|

Pursuant to the authority vested in the Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapters 1 and 2; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

**IT IS ORDERED AND RESOLVED:** That the following new large spark-ignition engines and emission control systems produced by the manufacturer are certified for use in off-road equipment as described below. Production engines shall be in all material respects the same as those for which certification is granted.

| MODEL YEAR | ENGINE FAMILY NAME | ENGINE DISPLACEMENT (liters) | FUEL TYPE |
|---|---|---|---|
| 2011 | BZ9XB02.2ZT8 | 2.0, 2.2 | Gasoline, LPG |

| DURABILITY HOURS | SPECIAL FEATURES & EMISSION CONTROL SYSTEMS | TYPICAL EQUIPMENT USAGE |
|---|---|---|
| 5000 | Multi-Port Fuel Injection, Heated Oxygen Sensors (2), Three-Way Catalytic Converter | Forklift, Aerial Lift, Sweeper, Other Industrial Equipment |

| | |
|---|---|
| **ENGINE MODELS (rated power in kilowatt, kW)** | Mazda 2.0L LPG (33 kW), Mazda 2.2L LPG (38 kW), Mazda 2.2L LPG (35 kW), Mazda 2.0L Dedicated Gas (39 kW), Mazda 2.2L Dedicated Gas (42 kW) |

The following are the hydrocarbon plus oxides of nitrogen (HC+NOx) and carbon monoxide (CO) exhaust certification emission standards (Title 13, California Code of Regulations, (13 CCR) Section 2433(b)(1)) and certification emission levels for this engine family in grams per kilowatt-hour (g/kW-hr). Engines within this engine family shall have closed crankcases in conformance with 13 CCR Section 2433(b)(3).

| (g/kW-hr) | HC+NOx | CO |
|---|---|---|
| **Exhaust Standards** | 0.8 | 20.6 |
| **Certification Levels** | 0.4 | 1.0 |

The following is the evaporative hydrocarbon emission standard (13 CCR Section 2433(b)(3)) and certification emission level for this engine family in grams per gallon of fuel tank capacity (g/gallon).

| Evaporative Certification Method | HC Certification Level (g/gallon) | HC Certification Standard (g/gallon) |
|---|---|---|
| Design Based | N/A | 0.2 |

**BE IT FURTHER RESOLVED:** That for the listed engines for the aforementioned model-year, the manufacturer has submitted, and the Executive Officer hereby approves, the information and materials to demonstrate certification compliance with 13 CCR Section 2433(c) (certification and test procedures), 13 CCR Section 2434 (emission control labels), and 13 CCR Sections 2435 and 2436 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

**This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.**

Executed at El Monte, California on this 4 day of November 2010.

Annette Hebert

Annette Hebert, Chief
Mobile Source Operations Division