

the otherwise applicable requirements. Engines excepted with respect to certain standards must comply with other standards from which they are not excepted.

Exempt means to allow (through a formal case-by-case process) engines to be produced and sold that do not meet (or do not fully meet) otherwise applicable standards. Exempted engines must conform to regulatory conditions specified for an exemption in this part and other applicable regulations. Exempted engines are deemed to be “subject to” the standards of this part even though they are not required to comply with the otherwise applicable requirements. Engines exempted with respect to certain standards must comply with other standards as a condition of the exemption.

Exhaust emissions means substances emitted to the atmosphere from exhaust discharge nozzles, as measured by the test procedures specified in subpart G of this part.

FAA means the U.S. Department of Transportation, Federal Aviation Administration.

Fuel venting emissions means raw fuel, exclusive of hydrocarbons in the exhaust emissions, discharged from aircraft gas turbine engines during all normal ground and flight operations.

Good engineering judgment involves making decisions consistent with generally accepted scientific and engineering principles and all relevant information, subject to the provisions of 40 CFR 1068.5.

ICAO Annex 16 means Volume II of Annex 16 to the Convention on International Civil Aviation (incorporated by reference in § 87.8).

In-use aircraft gas turbine engine means an aircraft gas turbine engine which is in service.

Military aircraft means aircraft owned by, operated by, or produced for sale to the armed forces or other agency of the federal government responsible for national security (including but not limited to the Department of Defense) and other aircraft considered to be military aircraft under international law and conventions.

New means relating to an aircraft or aircraft engine that has never been placed into service.

Operator means any person or company that owns or operates an aircraft.

Production cutoff date or *date of the production cutoff* means the date on which interim phase-out allowances end.

Rated output (rO) means the maximum power/thrust available for takeoff at standard day conditions as approved for the engine by FAA, including reheat contribution where applicable, but excluding any contribution due to water injection, expressed in kilowatts or kilonewtons (as applicable) and rounded to at least three significant figures.

Rated pressure ratio (rPR) means the ratio between the combustor inlet pressure and the engine inlet pressure achieved by an en-

gine operating at rated output, rounded to at least three significant figures.

Round has the meaning given in 40 CFR 1065.1001.

Smoke means the matter in exhaust emissions that obscures the transmission of light, as measured by the test procedures specified in subpart G of this part.

Smoke number means a dimensionless value quantifying smoke emissions calculated in accordance with ICAO Annex 16.

Spare engine means an engine installed (or intended to be installed) on an in-service aircraft to replace an existing engine and that is excepted as described in § 87.50(c).

Standard day conditions means the following ambient conditions: temperature = 15 °C, specific humidity = 0.00634 kg H₂O/kg dry air, and pressure = 101.325 kPa.

Subsonic means relating to aircraft that are not supersonic aircraft.

Supersonic means relating to aircraft that are certificated to fly faster than the speed of sound.

Tier 0 means relating to an engine that is subject to the Tier 0 NO_x standards specified in § 87.21.

Tier 2 means relating to an engine that is subject to the Tier 2 NO_x standards specified in § 87.21.

Tier 4 means relating to an engine that is subject to the Tier 4 NO_x standards specified in § 87.21.

Tier 6 means relating to an engine that is subject to the Tier 6 NO_x standards specified in § 87.23.

Tier 8 means relating to an engine that is subject to the Tier 8 NO_x standards specified in § 87.23.

Turbofan engine means a gas turbine engine designed to create its propulsion from exhaust gases and from air that bypasses the combustion process and is accelerated in a ducted space between the inner (core) engine case and the outer engine fan casing.

Turbojet engine means a gas turbine engine that is designed to create all of its propulsion from exhaust gases.

Turboprop engine means a gas turbine engine that is designed to create most of its propulsion from a propeller driven by a turbine, usually through a gearbox.

Turboshaft engine means a gas turbine engine that is designed to drive a rotor transmission system or a gas turbine engine not used for propulsion.

U.S.-registered aircraft means an aircraft that is on the U.S. Registry.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

§ 87.2 Acronyms and abbreviations.

The abbreviations used in this part have the following meanings in both upper and lower case:

Environmental Protection Agency

§ 87.5

CO Carbon Monoxide
CO₂ Carbon dioxide.
FAA Federal Aviation Administration, Department of Transportation
HC Hydrocarbon(s)
hr. Hour(s)
LTO Landing takeoff
min. Minute(s)
NO_x Oxides of nitrogen
rO Rated output
rPR Rated pressure ratio
sec. Seconds
SP Shaft power
SN Smoke number
T Temperature, degrees Kelvin
TIM Time in mode
W Watt(s)
° Degree
% Percent

[47 FR 58470, Dec. 30, 1982, as amended at 49 FR 31875, Aug. 9, 1984; 62 FR 25365, May 8, 1997; 74 FR 56374, Oct. 30, 2009]

EFFECTIVE DATE NOTE: At 77 FR 36381, June 18, 2012, § 87.2 was revised, effective July 18, 2012. For the convenience of the user, the revised text is set forth as follows:

§ 87.2 Abbreviations.

The abbreviations used in this part have the following meanings:

% percent
° degree
CO carbon monoxide
CO₂ carbon dioxide
g gram
HC hydrocarbon(s)
kN kilonewton
kW kilowatt
LTO landing and takeoff
NO_x oxides of nitrogen
rO rated output
rPR rated pressure ratio
SN smoke number

§ 87.3 General requirements.

(a) This part provides for the approval or acceptance by the Administrator or the Secretary of testing and sampling methods, analytical, techniques, and related equipment not identical to those specified in this part. Before either approves or accepts any such alternate, equivalent, or otherwise nonidentical procedures or equipment, the Administrator or the Secretary shall consult with the other in determining whether or not the action requires rulemaking under sections 231 and 232 of the Clean Air Act, as amended, consistent with the Administrator's and the Secretary's responsibilities under sections 231 and 232 of the Act. (42 U.S.C. 7571, 7572).

(b) Under section 232 of the Act, the Secretary issues regulations to insure compliance with this part.

(c) With respect to aircraft of foreign registry, these regulations shall apply in a manner consistent with any obligation assumed by the United States in any treaty, convention or agreement between the United States and any foreign country or foreign countries.

EFFECTIVE DATE NOTE: At 77 FR 36381, June 18, 2012, § 87.3 was revised, effective July 18, 2012. For the convenience of the user, the revised text is set forth as follows:

§ 87.3 General applicability and requirements.

(a) The regulations of this part apply to engines on all aircraft that are required to be certificated by FAA under 14 CFR part 33 except as specified in this paragraph (a). These regulations do not apply to the following aircraft engines:

(1) Reciprocating engines (including engines used in ultralight aircraft).

(2) Turboshift engines such as those used in helicopters.

(3) Engines used only in aircraft that are not airplanes. For purposes of this paragraph (a)(3), "airplane" means a fixed-wing aircraft that is heavier than air.

(4) Engines not used for propulsion.

(b) Under section 232 of the Act, the Secretary of Transportation issues regulations to ensure compliance with the standards and related requirements of this part (42 U.S.C. 7572).

(c) The Secretary of Transportation shall apply these regulations to aircraft of foreign registry in a manner consistent with obligations assumed by the United States in any treaty, convention or agreement between the United States and any foreign country or foreign countries.

(d) No State or political subdivision of a State may adopt or attempt to enforce any aircraft or aircraft engine standard respecting emissions unless the standard is identical to a standard applicable to such aircraft under this part (including prior-tier standards applicable to exempt engines).

§ 87.4 [Reserved]

§ 87.5 Special test procedures.

The Administrator or the Secretary may, upon written application by a manufacturer or operator of aircraft or aircraft engines, approve test procedures for any aircraft or aircraft engine that is not susceptible to satisfactory testing by the procedures set forth herein. Prior to taking action on any such application, the Administrator or