Federal Aviation Administration, DOT

§ 34.21 Standards for exhaust emissions.

(a) Exhaust emissions of smoke from each new aircraft gas turbine engine of class T8 manufactured on or after February 1, 1974, shall not exceed a smoke number (SN) of 30.

(b) Exhaust emissions of smoke from each new aircraft gas turbine engine of class TF and of rated output of 129 kilonewtons (29,000 pounds) thrust or greater, manufactured on or after January 1, 1976, shall not exceed SN=83.6 (rO) – 0.274 (rO is in kilonewtons).

(c) Exhaust emission of smoke from each new aircraft gas turbine engine of class T3 manufactured on or after January 1, 1978, shall not exceed a smoke number (SN) of 25.

(d) Gaseous exhaust emissions from each new aircraft gas turbine engine shall not exceed:

(1) For Classes TF, T8 engines greater than 26.7 kilonewtons (6000 pounds) rated output:

   (i) Engines manufactured on or after January 1, 1984:

   Hydrocarbons: 19.6 grams/kilonewton rO.

   (ii) Engines manufactured on or after July 7, 1997.

   Carbon Monoxide: 118 grams/kilonewton rO.

   (iii) Engines of a type or model of which the date of manufacture of the first individual production model was on or before December 31, 1995, and for
§ 34.30

which the date of manufacture of the
individual engine was on or before De-
cember 31, 1999:

Oxides of Nitrogen: \((40+2(r_{PR}))\) grams/
kilonewtons \(r_O\).

(iv) Engines of a type or model of
which the date of manufacture of the
first individual production model was
after December 31, 1995, or for which
the date of manufacture of the indi-
vidual engine was after December 31,
1999:

Oxides of Nitrogen: \((32+1.6 (r_{PR}))\) grams/
kilonewtons \(r_O\).

(v) The emission standards prescribed
in paragraphs (d)(1)(iii) and (iv) of this
section apply as prescribed beginning

(vi) The emission standards of this
paragraph apply as prescribed after De-
cember 18, 2005. For engines of a type
or model of which the first individual
production model was manufactured
after December 31, 2003:

(A) That have a rated pressure ratio
of 30 or less and a maximum rated out-
put greater than 89 kilonewtons: Ox-
ides of Nitrogen: \((19 + 1.6 (r_{PR}))\) grams/
kilonewtons \(r_O\).

(B) That have a rated pressure ratio
of 30 or less and a maximum rated out-
put greater than 26.7 kilonewtons but
not greater than 89 kilonewtons: Ox-
ides of Nitrogen: \((37.572 + 1.6(r_{PR})
- 0.2087(r_O))\) grams/kilonewtons \(r_O\).

(C) That have a rated pressure ratio
greater than 30 but less than 62.5, and
a maximum rated output greater than
89 kilonewtons: Oxides of Nitrogen: \((7 +
2(r_{PR}))\) grams/kilonewtons \(r_O\).

(D) That have a rated pressure ratio
greater than 30 but less than 62.5, and
a maximum rated output greater than
89 kilonewtons: Oxides of Nitrogen: \((42.71
+ 1.4286(r_{PR}) - 0.4013(r_O) +
0.00642(r_{PR} \times r_O))\) grams/kilonewtons
\(r_O\).

(E) That have a rated pressure ratio
of 62.5 or more: Oxides of Nitrogen: \((32
+ 1.6 (r_{PR}))\) grams/kilonewtons \(r_O\).

(e) Smoke exhaust emissions from
each gas turbine engine of the classes
specified below shall not exceed:

(1) Class TF of rated output less than
26.7 kilonewtons (6000 pounds) manu-
factured on or after August 9, 1985
\(SN=83.6(r_O)^{-0.274}\) (\(r_O\) is in kilonewtons) not
to exceed a maximum of \(SN=50\).

(2) Classes T3, T8, TSS, and TF of
rated output equal to or greater than
26.7 kilonewtons (6000 pounds) manu-
factured on or after January 1, 1984
\(SN=83.6(r_O)^{-0.274}\) (\(r_O\) is in kilonewtons) not
to exceed a maximum of \(SN=50\).

(3) For Class TP of rated output
equal to or greater than 1,000 kilowatts
manufactured on or after January 1,
1984:

\(SN=187(ro)^{-0.168}\) (\(ro\) is in kilowatts)

(f) The standards set forth in para-
graphs (a), (b), (c), (d), and (e) of this
section refer to a composite gaseous
emission sample representing the oper-
atting cycles set forth in the applicable
sections of subpart G of this part, and
exhaust smoke emissions emitted dur-
ing operations of the engine as speci-
fied in the applicable sections of sub-
part H of this part, measured and cal-
culated in accordance with the proce-
dures set forth in those subparts.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55
FR 37287, Sept. 10, 1990, as amended by Amdt.
34–3, 64 FR 5559, Feb. 3, 1999; Amdt. 34–4, 74
FR 19127, Apr. 28, 2009]

Subpart D—Exhaust Emissions (In-
use Aircraft Gas Turbine Engines)

§ 34.30 Applicability.

The provisions of this subpart are ap-
licable to all in-use aircraft gas tur-
bine engines certificated for operation
within the United States of the classes
specified, beginning on the dates speci-
fied in §34.31.

§ 34.31 Standards for exhaust emis-
sions.

(a) Exhaust emissions of smoke from
each in-use aircraft gas turbine engine of
Class T8, beginning February 1, 1974,
shall not exceed a smoke number (SN) of
30.

(b) Exhaust emissions of smoke from
each in-use aircraft gas turbine engine