

Environmental Protection Agency

Pt. 91, Subpt. D, App. A

(f) Verify that all NDIR analyzers meet the water rejection ratio and the CO₂ rejection ratio as specified in §91.325.

(g) Verify that the dynamometer test stand and power output instrumentation meet the specifications in Table 2 in appendix A to this subpart.

§91.329 Catalyst thermal stress test.

(a) *Oven characteristics.* The oven used for thermally stressing the test catalyst must be capable of maintaining a temperature of 500 ±5 °C and 1000 ±10 °C.

(b) *Evaluation gas composition.* (1) A synthetic exhaust gas mixture is used for evaluating the effect of thermal stress on catalyst conversion efficiency.

(2) The synthetic exhaust gas mixture must have the following composition:

Constituent	Volume percent	Parts per million
Carbon Monoxide ¹	1	.....
Oxygen	1.3	.....
Carbon Dioxide	9	.....
Water Vapor	10	.....
Sulfur Dioxide	.....	20
Oxides of Nitrogen	.....	280
Hydrogen	.....	3500
Hydrocarbon ^{1,2}	.....	4000
Nitrogen=Balance	.....	.....

¹ Alternatively, the carbon monoxide and hydrocarbon proportions of the mixture may be changed to 1.2% and 4650 ppm, respectively (using on of these alternative concentrations requires that the other be used simultaneously).
² Propylene/propane ratio=2/1.

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APPENDIX A TO SUBPART D OF PART 91—TABLES

TABLE 1—SYMBOLS USED IN SUBPARTS D AND E

Symbol	Term	Unit
A _{YM}	Final weighted emission test results	g/kW-hr
C ₃ H ₈	Propane	
C _B	Concentration of emission in background sample	ppm
C _D	Concentration of emission in dilute sample	ppm
CO	Carbon monoxide	
CO ₂	Carbon dioxide	
conc	Concentration (ppm by volume)	ppm
D _X	Density of a specific emission (XX)	g/m ³
D _{XX}	Volume concentration of a specific emission (XX) on a dry basis.	percent
DF	Dilution factor of dilute exhaust.	
D1	Water vapor mixture concentration	percent
f	Engine specific parameter considering atmospheric conditions	
G _{AIRD}	Intake air mass flow rate on dry basis	kg/h
G _{FUEL}	Fuel mass flow rate	kg/h
GP	Analyzer standard operating pressure	Pa
G _s	Mass of carbon measured during a sampling period	g
H	Absolute humidity (water content related to dry air)	gr/kg
H ₂	Hydrogen	
i	Subscript denoting an individual mode	
IT	Indicated torque	N-m
K	Wet to dry conversion factor	
K _H	Humidity correction factor	
K _V	Calibration coefficient for critical flow venturi	
M _X	Molecular weight of a specific molecule(XX)	g/mole
mass	Pollutant mass flow	g/h
M _{FUEL}	Mass of fuel consumed during a sampling period	g
N	Pump revolutions during test period	revs
N ₂	Nitrogen	
NO	Nitric oxide	
NO ₂	Nitrogen dioxide	
NO _X	Oxides of nitrogen	
O ₂	Oxygen	
O ₂ I	Oxygen concentration of the burner air	percent
P	Absolute pressure	kPa
P _{AUX}	Declared total power absorbed by auxiliaries fitted for the test	kW
P _B	Total barometric pressure (average of the pre-test and post-test values).	kPa
P _{dew}	Test ambient saturation vapor pressure at the dew point	kPa
P _e	Absolute pump outlet pressure	kPa
P _{ED}	Pressure drop between the inlet and throat of metering venturi	kPa
P _i	P _i =P _{M,i} + P _{AUX,i}	