

the specimen must be the same as that of the aircraft component it represents up to a maximum thickness of 1.75 inches (45 mm). Test specimens representing thicker components must be 1.75 inches (45 mm).

(2) *Conditioning.* Specimens must be conditioned as described in Part 1 of this appendix.

(3) *Mounting.* Each test specimen must be wrapped tightly on all sides of the specimen, except for the one surface that is exposed with a single layer of .001 inch (.025 mm) aluminum foil.

(e) *Procedure.* (1) The power supply to the radiant panel must be set to produce a radiant flux of 3.5 ± 0.05 W/cm², as measured at the point the center of the specimen surface will occupy when positioned for the test. The radiant flux must be measured after the air flow through the equipment is adjusted to the desired rate.

(2) After the pilot flames are lighted, their position must be checked as described in paragraph (b)(8) of this part IV.

(3) Air flow through the apparatus must be controlled by a circular plate orifice located in a 1.5 inch (38.1 mm) I.D. pipe with two pressure measuring points, located 1.5 inches (38 mm) upstream and .75 inches (19 mm) downstream of the orifice plate. The pipe must be connected to a manometer set at a pressure differential of 7.87 inches (200 mm) of Hg. (See Figure 1B of this part IV.) The total air flow to the equipment is approximately .04 m³/seconds. The stop on the vertical specimen holder rod must be adjusted so that the exposed surface of the specimen is positioned 3.9 inches (100 mm) from the entrance when injected into the environmental chamber.

(4) The specimen must be placed in the hold chamber with the radiation doors closed. The airtight outer door must be secured, and the recording devices must be started. The specimen must be retained in the hold chamber for 60 seconds, plus or minus 10 seconds, before injection. The thermopile “zero” value must be determined during the last 20 seconds of the hold period. The sample must not be injected before completion of the “zero” value determination.

(5) When the specimen is to be injected, the radiation doors must be opened. After the specimen is injected into the environmental chamber, the radiation doors must be closed behind the specimen.

(6) [Reserved]

(7) Injection of the specimen and closure of the inner door marks time zero. A record of the thermopile output with at least one data point per second must be made during the time the specimen is in the environmental chamber.

(8) The test duration is five minutes. The lower pilot burner and the upper pilot burner must remain lighted for the entire duration of the test, except that there may be intermittent flame extinguishment for periods that do not exceed 3 seconds. Furthermore, if the optional three-hole upper burner is used, at least two flamelets must remain lighted for the entire duration of the test, except that there may be intermittent flame extinguishment of all three flamelets for periods that do not exceed 3 seconds.

(9) A minimum of three specimens must be tested.

(f) *Calculations.* (1) The calibration factor is calculated as follows:

$$K_h = \frac{(F_1 - F_0)}{(V_1 - V_0)} \times \frac{(210.8 - 22)k_{cal}}{\text{mole}} \times \frac{273}{T_a} \times \frac{P - P_v}{760} \times \frac{\text{mole CH}_4\text{STP}}{22.41} \times \frac{\text{WATT min}}{.01433kcal} \times \frac{kw}{1000w}$$

F_0 = flow of methane at baseline (lpm)
 F_1 = higher preset flow of methane (lpm)
 V_0 = thermopile voltage at baseline (mv)
 V_1 = thermopile voltage at higher flow (mv)
 T_a = Ambient temperature (K)
 P = Ambient pressure (mm Hg)
 P_v = Water vapor pressure (mm Hg)

(2) Heat release rates may be calculated from the reading of the thermopile output voltage at any instant of time as:

$$HRR = \frac{(V_m - V_b)K_n}{.02323m^2}$$

HRR = heat release rate (kw/m²)
 V_b = baseline voltage (mv)
 V_m = measured thermopile voltage (mv)

K_h = calibration factor (kw/mv)

(3) The integral of the heat release rate is the total heat release as a function of time and is calculated by multiplying the rate by the data sampling frequency in minutes and summing the time from zero to two minutes.

(g) *Criteria.* The total positive heat release over the first two minutes of exposure for each of the three or more samples tested must be averaged, and the peak heat release rate for each of the samples must be averaged. The average total heat release must not exceed 65 kilowatt-minutes per square meter, and the average peak heat release rate must not exceed 65 kilowatts per square meter.