

General Language for Common Test Apparatus in New Appendix F

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By: Fire Safety

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Federal Aviation
Administration



Objective

- **New Appendix F will have different structure**
- **A new “Materials Fire Test Handbook” will be produced (maybe “Handbook of Materials Fire Test Methods”?)**
- **Will be laid out similar to current handbook**
 - Individual “chapters” for each test method
- **Some test devices are shared amongst multiple test methods**
 - Radiant Panel
 - Insulation
 - Ducting
 - Wiring
 - Composites
 - NexGen Oil Burner
 - Cargo liner
 - Seat cushion
 - Insulation
 - Powerplant components
 - Heat Flux Transducers
 - Most tests

Approach

- Refer to specific chapters for descriptions of the test device

Chapter NG Next Generation Fire Test Burner

NG.1 Scope

NG.1.1 This chapter describes in detail the Federal Aviation Administration Next Generation Fire Test Burner, also known as the "Sonic" or the "NexGen" burner.

NG.2 Description

NG.2.1 Next Generation or Sonic Burner

The burner is a gun-type, using a pressurized, sprayed fuel charge in conjunction with a ducted air source to produce the burner flames. An interchangeable, screw-in fuel nozzle will be used to produce the conically-shaped fuel charge from a pressurized fuel source. A pressurized air source controlled via a regulated sonic orifice will supply the combustion air. The combustion air will be ducted through a cylindrical draft tube containing a series of diffusing vanes. The diffused combustion air will mix with the sprayed fuel charge in a bell-shaped combustion cone. The fuel/air charge will be ignited by a high-voltage spark electrode pair positioned in the vicinity of the fuel spray nozzle. Flame characteristics can be adjusted by varying the pressure of the regulated air into the sonic orifice. A schematic of the next generation fire test burner is displayed in Figure 1. Note that the configuration of the burner components will be test method specific and described in the respective chapter.

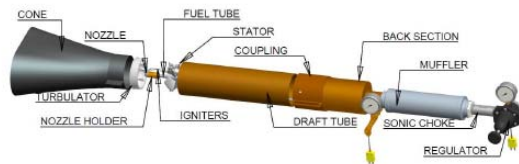


Figure 1. Schematic of the NexGen Burner - Exploded View.

NG.3 Test Apparatus Components

NG.3.1 Burner Housing

The burner housing is comprised of three main sections, the draft tube, the coupling, and the back section. The draft tube, displayed in Figure 2, is

Radiant Panel Test Method (General)

X. Scope

This test method is intended for use in determining the flammability and flame propagation characteristics materials when exposed to radiant heat and a small flame.

X.1 Definitions

X.1.1 Ignition Time

Ignition time is the length of time the burner flame is applied to the specimen. For this test, the ignition time is X seconds.

X.1.2 After Flame Time

After flame time is the time in seconds that the specimen continues to flame after the burner is removed.

X.1.3 Flame Propagation

Flame propagation is the furthest distance of the propagation of visible flame towards the far end of the test specimen, measured from the midpoint of the ignition source flame.

X.1.4 Radiant Heat source

The radiant heat source is an electric panel.

X.1.5 Zero Point

Zero point is the pilot burner application point on the test specimen.

X.1.6 Burn Length

Burn length is the distance from zero point to the farthest evidence of damage by fire. It includes areas of partial combustion, charring, or embrittlement, but not areas sooted, stained, warped, or discolored nor areas where materials have shrunk or melted away from the heat.

X.2 Test Apparatus

X.2.1 Test Chamber