

# FAA 25.853 — Explained for Upholsterers

## What this regulation actually means (plain language)

**25.853 is about fire.**

Specifically: *how fast materials inside an aircraft burn, spread flame, and produce smoke.*

If you install anything inside a certified aircraft—

**fabric, foam, leather, carpet, insulation, panels—it must meet fire standards.**

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## Why this matters in real life

In a car or boat, fire risk is bad.

In an aircraft, it's catastrophic.

At altitude:

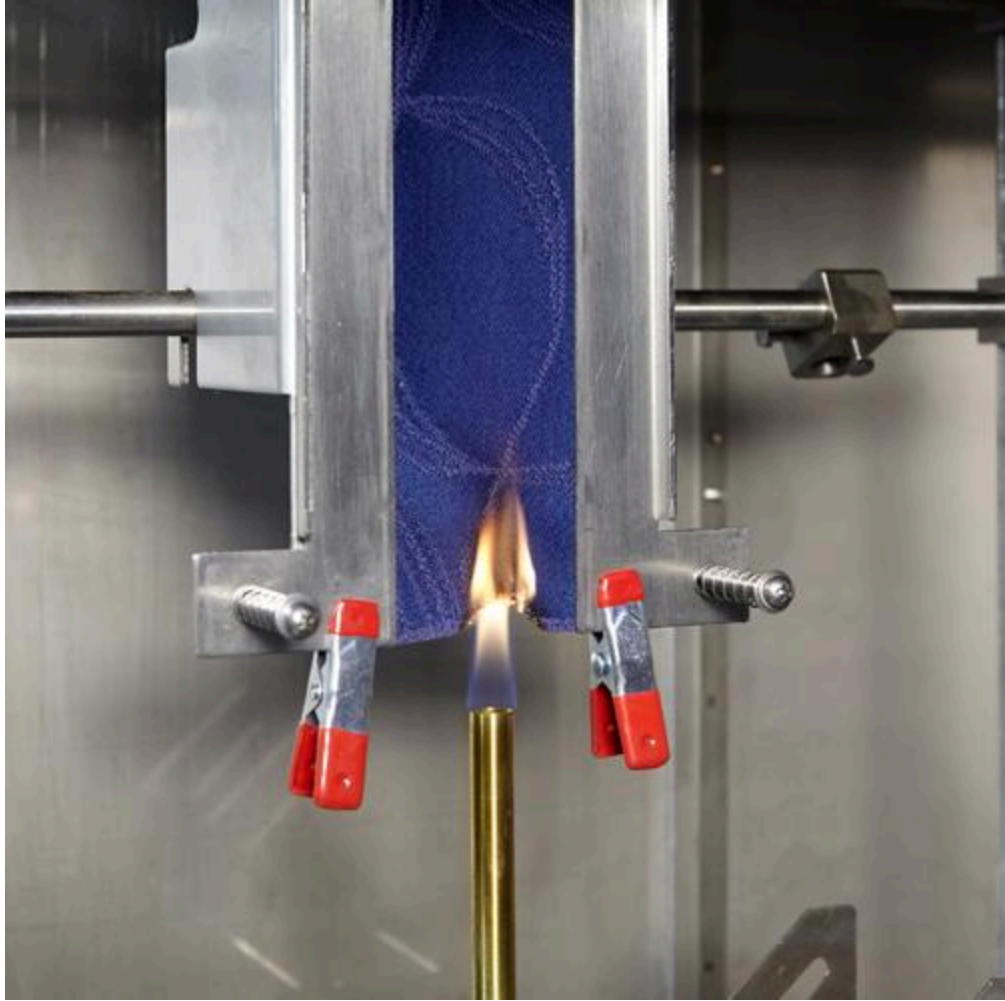
- No immediate exit
- Limited firefighting ability
- Smoke spreads fast through cabin air systems

So the FAA requires that **materials either resist burning or self-extinguish quickly.**

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## The 3 core things being tested

1.  **Flame resistance (Vertical Burn Test)**







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Materials are exposed to a flame for a set time.

To pass:

- Flame must go out quickly after removal
- Burn length must stay within limits
- Dripping (molten material) must not spread fire

👉 **Translation for the shop:**

If it lights easily and keeps burning → it's illegal for certified aircraft use.

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## 2. 🌀 Smoke production



HIGH POWER



**DEATAK**

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SMOKE DENSITY CHAMBER  
MODEL: SD-3



**NATO INTERNATIONAL STAFF - DEFENCE INVESTMENT DIVISION**

1157-30

**ALLIED  
FIRE  
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PUBLICATION**

**AFAP-2  
(Edition 3)**

# **NATO REACTION-TO-FIRE TESTS FOR MATERIALS**

## **SMOKE GENERATION**

**AFAP - 2  
(Edition 3)**

**JULY 2010**





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Even if something doesn't burn fast, **smoke can kill first.**

Materials are tested for:

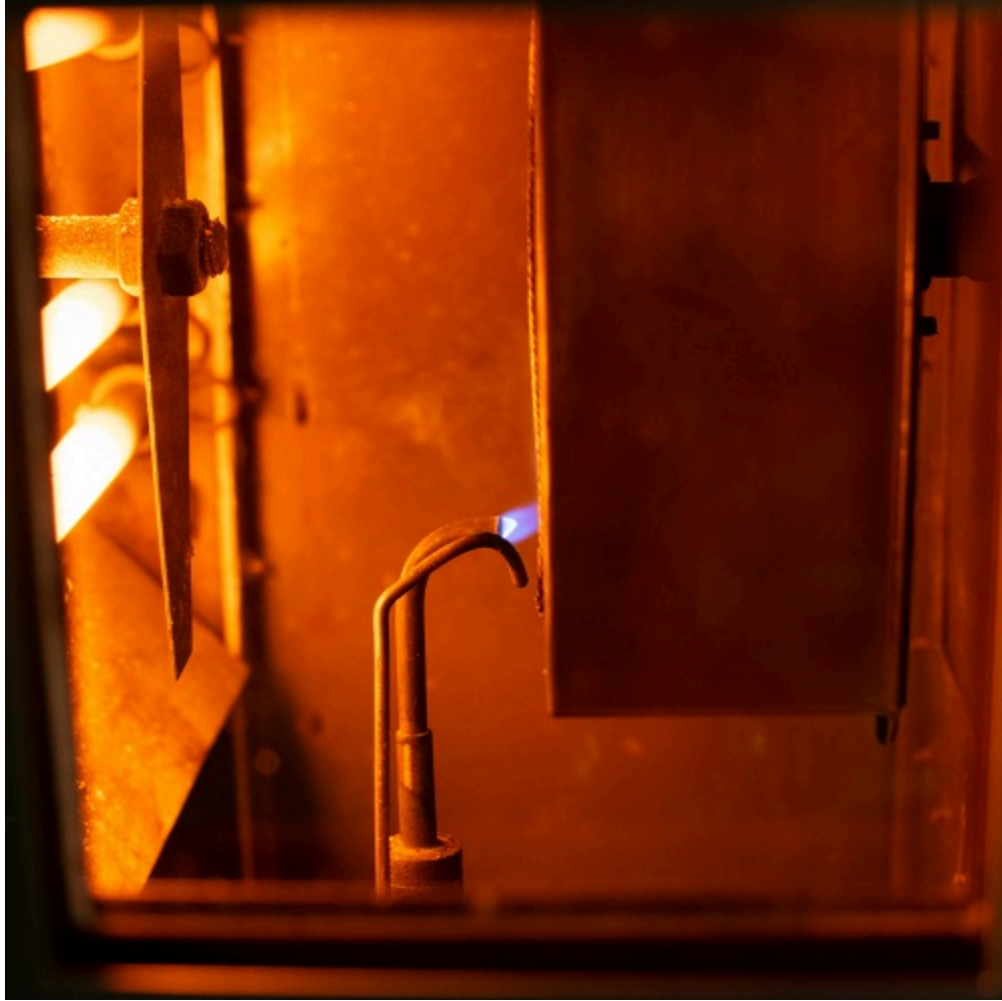
- How much smoke they produce
- How dense it becomes

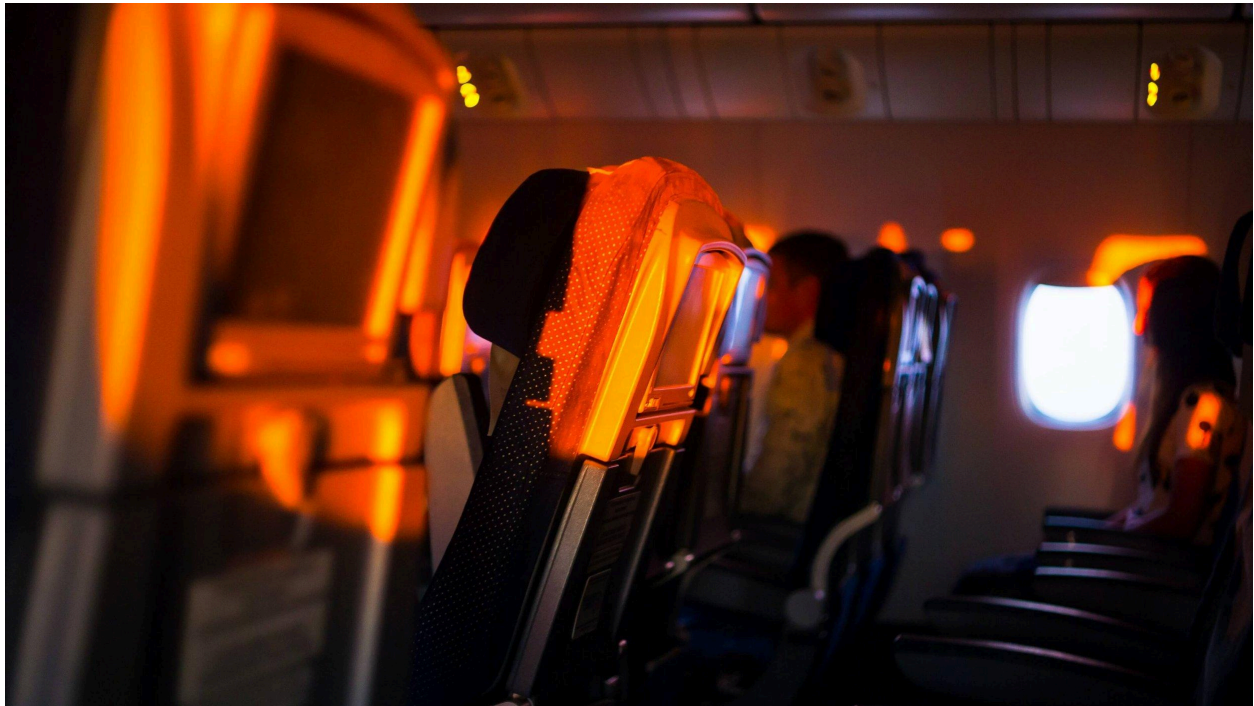
👉 **Shop translation:**

Cheap foam and vinyl often fail here—even if they “don't burn much.”

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3. 🦴 **Heat release (for larger aircraft)**





This measures:

- How much energy (heat) the material gives off during a fire

👉 Why it matters:

More heat = fire spreads faster → less time to escape.

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## What parts of your work are affected

If you're doing **aircraft upholstery**, this applies to:

- Seat foam (BIG one — must be fire-blocked or certified)
  - Seat covers (leather, fabric, vinyl)
  - Carpets
  - Side panels
  - Insulation
  - Headliners
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## The BIG rule upholsterers must remember

👉 You cannot just pick materials—you must use certified materials.

That means:

- Comes with burn test certification (burn cert)
  - Traceable to manufacturer
  - Approved for aviation use
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## Real shop example

You install:

- Automotive foam ❌
- Regular vinyl ❌

Even if it looks perfect...

👉 It FAILS 25.853 → aircraft is **not airworthy**

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## Practical upholstery takeaway

### What you **SHOULD** do

- Buy **FAA-certified foam and fabrics**
- Keep **burn certificates on file**
- Use **fire-blocking layers** when required
- Follow **OEM or STC specifications**

### What you should **NEVER** do

- Substitute automotive materials
- Assume leather is always compliant (it's not automatically)
- Mix certified and non-certified layers

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## Simple way to explain it to clients

“Everything in your aircraft interior has to resist fire and limit smoke.  
It's not about looks—it's about giving you time to survive if something goes wrong.”