

NON-FIRE STANDARDS FOR UPHOLSTERY FABRICS

1. M1 Standard (NF P 92-503)

- **Context:** The M1 standard is a French classification that determines the fire reaction of materials used in public buildings or places open to the public (schools, hotels, theaters, etc.).
- **Objective:** This standard evaluates the combustibility and flame spread of upholstery materials. A material classified as M1 is considered very difficult to ignite.
- **Criteria:**
 - Materials must be either non-flammable or have low flame propagation capacity.
 - Tests include measuring fire spread speed and smoke emission levels.
- **Application:** The M1 standard is often required for upholstery fabrics in public spaces or buildings open to the public in France. This standard ensures that the materials meet stringent fire safety requirements.

2. EN 1021-1-2 Standards

The EN 1021-1-2 is a European standard specifically designed to test the fire reaction of furniture materials under ignition conditions.

EN 1021-1-2: Ignition by cigarette (-1) and open flame (match) (-2)

- **Objective:** This standard assesses the reaction of furniture materials to ignition by a cigarette and an open flame, such as a match or a small direct flame source.
- **Criteria:** The test involves placing a lit cigarette on the material for a specified duration to observe whether the material ignites. This simulates a situation where someone might accidentally drop a cigarette on the fabric. A second standardized test exposes the material to a flame to measure its behavior—specifically whether it ignites quickly or if the flame spreads.
- **Applications:** These tests are primarily used for upholstery fabrics to evaluate their resistance to accidental ignition.

3. Crib 5 = BS5852 (British Standard)

- **Objective:** To test the fire reaction of materials under more severe conditions, specifically for seat and cushion-type furniture.
- **Criteria:** Fabrics must withstand a standardized heat source (crib) that generates an intense fire.

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- **Application:** Specific to contract furniture and upholstered seating. This test simulates a fire in a closed environment.

4. BS 5867 (British Standard)

- **Objective:** Specifies fire resistance requirements for fabrics used in curtains and window coverings in public and commercial buildings.
- **Criteria:** Materials must resist flame spread while minimizing smoke and flaming droplet production.
- **Applications:** Curtains, blinds, and decorative fabrics in hotels, hospitals, theaters, and other public spaces.

5. BS 7175 (British Standard)

The British standard BS 7175 sets fire resistance requirements for textiles and bedding materials used in high-traffic environments, such as hotels, hospitals, care centers, and public transportation. It covers tests needed to ensure increased safety in public areas.

- **Objective:** Ensure that bedding materials do not contribute to fire spread in high-occupancy public places.
- **Criteria:** This standard evaluates materials' fire reaction by testing combustibility, flame spread, smoke production, and toxicity of gases released during combustion.
- **Tests:** Tests include open flame and combustion tests, simulate low- and medium-intensity ignition sources, and measure bedding materials' ignition resistance.
- **Applications:** Applicable to bedding materials used in hotels, hospitals, care centers, and any commercial or public environments where fire safety is critical.

6. BS 5852 (1979), Sources 0 and 1 = Cigarette & Match (British Standard)

The British standard BS 5852, established in 1979, serves as a reference for evaluating fire resistance of upholstery materials, especially padding and fabrics used in furniture. It includes combustibility tests to simulate common fire hazards, such as those caused by a lit cigarette (Source 0) and a small flame (Source 1).

- **Objective:** Minimize fire risk in domestic and public environments by ensuring upholstery materials resist common ignition sources.
- **Criteria:** The standard tests flame spread, combustion rate, and material resistance to low-intensity ignition sources.
- **Tests:** Includes specific tests for two ignition sources:
 - **Source 0:** Resistance test to a lit cigarette placed on the material.
 - **Source 1:** Resistance test to a small flame equivalent to a match.

- **Applications:** Applicable to fabrics and padding materials for domestic, contract, and public furniture.

7. Classe UNO (Italian Standard)

The Classe UNO is an Italian fire resistance standard that primarily applies to furnishing materials, especially fabrics used in public spaces, commercial buildings, and contract environments. It is widely recognized in Italy and ensures that materials meet strict fire safety requirements.

- **Objective:** To assess the ability of materials to limit the spread of fire for use in public and contract spaces in Italy.
- **Criteria:** Materials must be highly resistant to ignition and flame spread. The standard also evaluates smoke production and gas toxicity in the event of combustion.
- **Tests:** Includes flammability and flame spread tests to verify that the material effectively resists ignition sources.

8. IMO 7 and 8 (International Maritime Standards)

- **Objective:** Ensure safety onboard ships by testing fire resistance of textiles used in interior spaces.
- **Criteria:** Materials must meet the International Maritime Organization (IMO) requirements, specifically test categories 7 and 8, which specify flame resistance, flame spread, and heat resistance in a maritime environment.
 - **IMO 7:** Test for materials used in living and working spaces.
 - **IMO 8:** Test for materials used in cabins and bathrooms.
- **Applications:** Applicable to seat coverings, curtains, carpets, and all textiles intended for ships.

9. NFPA (National Fire Protection Association – U.S. Standard)

The NFPA standards are fire safety regulations widely used in the United States, focusing on the fire resistance and performance of materials, including upholstery fabrics and furnishings. These standards are recognized internationally for their rigorous testing procedures and are frequently required in public, commercial, and contract environments.

- **Objective:** To evaluate the fire resistance of materials and ensure they minimize fire risks in public spaces, workplaces, and contract applications.
- **Criteria:**
 - Materials must demonstrate resistance to ignition and flame spread.
 - The tests also assess heat release rates, smoke generation, and the toxicity of gases produced during combustion.

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- Compliance levels vary depending on the specific NFPA code applicable to the intended use (e.g., NFPA 701 for curtains and drapes, NFPA 260 for upholstered furniture).
- **Tests:**
 - Includes a variety of tests depending on the material's application. For example:
 - **NFPA 701:** Measures the flame resistance of fabrics used in curtains, drapes, and other hanging materials.
 - **NFPA 260:** Assesses the fire performance of upholstered furniture components under specific conditions.
 - **NFPA 72:** Evaluates materials used in construction and public spaces.
 - The tests simulate real-world fire scenarios to determine how the material behaves under ignition and sustained burning conditions.
- **Applications:** Relevant to upholstery, drapery, wall coverings, and any materials used in buildings requiring compliance with U.S. fire codes, such as hotels, theaters, hospitals, and offices.

10. CAL 117 (California Technical Bulletin 117) – U.S. Standard

- **Objective:** Ensure that upholstered furniture and fabric materials, such as sofas, chairs, and mattresses, meet strict fire resistance criteria to minimize fire risks in both residential and commercial environments.
- **Criteria:**
 - Materials must resist ignition when exposed to a heat source, such as a cigarette or small flame.
 - The standard assesses the performance of foam, padding, and fabrics in terms of flame spread, combustion, and smoke production.
 - Tests aim to reduce the vulnerability of furniture and fabrics to common household fire hazards.
- **Tests:**
 - CAL 117 includes specific tests on upholstery and fabric materials to assess their resistance to ignition.
 - Materials are exposed to an open flame for a specified time to observe their behavior.
 - The tests also include exposing materials to a lit cigarette to simulate a typical domestic fire origin.
 - The tests measure flame propagation, heat production, and smoke emission.
- **Applications:**
 - This standard is primarily used for upholstered furniture and fabrics, including sofas, chairs, mattresses, cushions, and other furniture items used in both residential and commercial environments in California.
 - It is also often required in other states or countries that adopt similar standards, such as Canada, for furniture intended for public or commercial spaces.
- **Note:** There are multiple revisions of CAL 117, with different specific criteria based on the updates. It is important to verify the current version applicable to ensure compliance.