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TECHNICAL BULLETIN 121

Flammability Test Procedure for Mattresses
For Use In High Risk Occupancies

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FLAMMABILITY TEST PROCEDURE FOR MATTRESSES FOR USE IN HIGH RISK OCCUPANCIES

I. Scope

1. This test procedure is designed to test mattresses for use in occupancies that are identified as high risk. Such facilities might include, but are not limited to, jails, prisons, penal institutions, correctional facilities, juvenile detention centers, nursing homes, and health care facilities.
2. This test procedure is not intended to be used for the evaluation of residential mattresses.

II. Test Facility

- (a) The described test procedure is a full-scale fire test. Small-scale fire test methods cannot be substituted for the described procedure.
- (b) The test burn room shall be 12 x 10 feet or a close approximation with an 8 foot ceiling height. The room shall have no openings other than a doorway opening approximately 38 x 81 inches, located as indicated in Figure 1.
- (c) The test burn room shall be instrumented to monitor temperature, carbon monoxide concentration, and mattress weight loss.
- (d) The test room shall be unfurnished except for a mattress support that shall closely resemble a penal institution mattress spring unit, approximately 31 x 77 inches.
- (e) The mattress spring unit shall be positioned as indicated in Figure 1.

III. Test Sample

The test sample shall consist of a typical institutional mattress, complete with cover, with approximate dimensions 30 x 76 inches and with thickness appropriate to the application.

IV. Test Conditioning

The test mattress and newsprint shall be conditioned for at least 48 hours prior to test at $70 \pm 5^\circ\text{F}$ and a relative humidity of less than 55%. Test materials shall be tested within 10 minutes of removal from such condition if test room conditions differ from the above.

V. Test Ignition Source

- (a) The test ignition source shall be a galvanized metal container with ten (10) double sheets of loosely wadded newspaper.
- (b) The dimensions of the metal container shall be approximately 10 inches high, 12-1/2 inches top diameter, and 9 inches bottom diameter.
- (c) Each newsprint double sheet shall have the dimensions of 23 x 28 inches and an approximate weight of 18.5 ± 0.5 grams.
- (d) The newsprint shall be positioned in the container so that it is approximately level with the top of the container.

VI. Test Procedure

- (a) Place a weighed, conditioned, complete mattress on the spring support in a flat horizontal position as indicated in Figure 1.
- (b) The entire mattress and support system shall be assembled on a device capable of monitoring the weight loss of the mattress during combustion.
- (c) Position a thermocouple directly over the geometric center of the horizontal mattress surface and 1 inch below the ceiling.
- (d) Place the newsprint filled metal container beneath the mattress and support such that the center of the container is at the geometric center of the bottom mattress surface.
- (e) The height of the mattress support shall be adjusted so that the bottom surface of the mattress is $3 \pm 1/4$ inches above the top of the metal container.
- (f) Start monitoring instrumentation. Ignite the newsprint with a match and allow combustion to continue until either:
 1. All combustion has ceased; or
 2. At least ten percent by weight of the mattress has been consumed.

VII. Test Criteria

A mattress fails to meet the requirements of this test procedure if any of the following criteria are exceeded:

1. Greater than ten (10) percent weight loss in the first ten (10) minutes of the test.
2. A temperature of 500°F or greater at the thermocouple above the test mattress at any time during the test.
3. Carbon monoxide concentration in excess of 1,000 p.p.m. at any point in the test room at any time during the test.

VIII. Caution

Full-scale fire tests can be dangerous. All tests should be supervised by experienced test personnel. Adequate fire suppression equipment and self-contained breathing devices must be available for test personnel. Products of combustion can be irritating and dangerous, therefore, test personnel must avoid exposure to smoke and gases produced during testing as much as possible. Full-scale fire tests should never be left unattended. Test personnel must be certain upon completion of the test that combustion is totally suppressed.

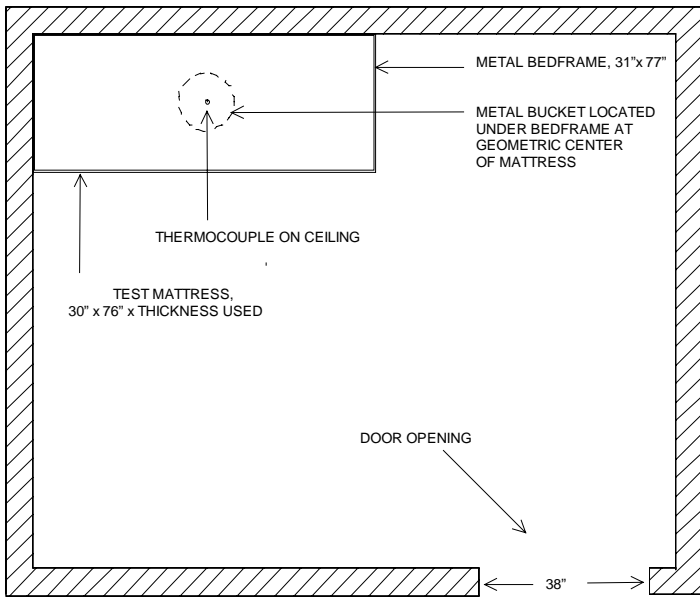


Figure 1

BURN ROOM FOR TESTING MATTRESSES
FOR HIGH RISK OCCUPANCIES