



UL 94 - Flame Rating - 5VA

UL 94 flame classifications

There are 12 flame classifications specified in UL 94 that are assigned to materials based on the results of these small-scale flame tests. These classifications listed in descending order for each of the following three groupings are used to distinguish a material's burning characteristics after test specimens have been exposed to a specified test flame under controlled laboratory conditions.

- Six of the classifications relate to materials commonly used in manufacturing enclosures, structural parts and insulators found in consumer electronic products (5VA, 5VB, V-0, V-1, V-2, HB).
- Three of the remaining six classifications relate to low-density foam materials commonly used in fabricating speaker grills and sound-deadening material (HF-1, HF-2, HBF).
- The last three classifications are assigned to very thin films, generally not capable of supporting themselves in a horizontal position (VTM-0, VTM-1, VTM-2). These are usually assigned to substrates on flexible printed circuit boards.

UL94 5VA & 5VB Flammability Standard

Specimens

Bars: Length 125 mm (5 in) x Width 13 mm (0.5 in) x Thickness [typically 3.0 mm (1/8 in)].

Plaques: Length 150 mm (6 in) x 150 mm (6 in) x Thickness [typically 3.0 mm (1/8 in)].

Procedure for Bars

A total of 10 specimens (2 sets) are tested per thickness. Five specimens of each thickness are tested after conditioning for 48 hours at 23 degrees C and 50% RH. Five specimens of each thickness are tested after conditioning for 7 days at 70 degrees C.

For bar specimens, the specimens are mounted with the long axis vertical. A 125 mm overall high Bunsen burner flame with a 40 mm blue inner cone is applied to the lower corner of each specimen at an angle of 20 degrees from vertical such that the tip of the blue inner cone touches the specimen. The flame is applied for 5 seconds and removed for 5 seconds. The operation is to be repeated until each specimen has been subjected to 5 applications of the test flame.

Procedure for Plaques

Same as for bars except that the plaques are to be mounted on the horizontal plane with the flame applied to the center of the bottom surface of the plaque.

Requirements for 5VA

The specimens may not burn with flaming or glowing combustion for more than 60 seconds after the fifth application of the test flame. The specimens may not drip flaming particles that ignite the dry absorbent surgical cotton located 300 mm below the test specimen. Plaque specimens may not exhibit burnthrough.

Requirements for 5VB

The specimens may not burn with flaming or glowing combustion for more than 60 seconds after the fifth application of the test flame. The specimens may not drip flaming particles that ignite the dry absorbent surgical cotton located 300 mm below the test specimen. Plaque specimens can exhibit burnthrough.

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