EMC Solution
Die-Cutting
Absorber

Test Method

■ UL 94HBF Test (Horizontal Burning Foamed Material Test)

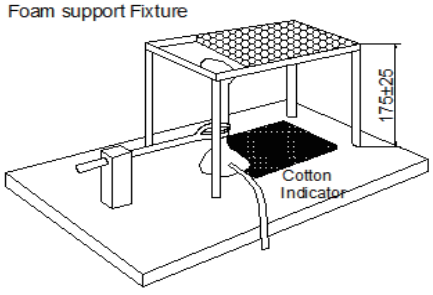
Con -cept	This is a hodizental flame retardant test for materials with a density of 0.25g/cc or less such as foam or sponge, not plastics made of hard materials. (Density measurement required)
Speci -mens	20pieces of 150(L) x 50(W) x Min. and Max. thickness covering the thickness range to be considered. Specimens tested by this method are limited to a maximum thickness of 13mm. Intermediate thicknesses are not to exceed increments of 6mm.
Descrip -tion	1. Each specimen is to be marked across its width with three lines, 25mm, 60mm, and 125mm from one end, referred to as gauge marks. 2. The burner with wing tip is then to be placed remote from the specimen, ignited, and adjusted to provide a blue flame 38mm high, when measured in subdued light. The flame is to be applied for seconds and then removed from the specimen a distance of 100mm or greater. 3. For specimens considered for Class HBF, the duration of burning(sec), reach th 25mm, ansd between the 25 mm until flaming or glowing stops or passes the 125mm gauge mark are to be observed and recorded. 4. For specimens determined for Class HF-1 or HF-2, according to the table below.The flame must not exceed 60mm.
Classi -fied	3 grades are classified (good class in order of HF-1> HF-2> HBF) For specimens considered for Class HF-1 or HF-2, the following are to be observed and recorded: Record the time when: a) The flaming ceases (afterflame). b) The flaming and glowing ceases (afterglow). c) The flaming or glowing front reaches the 125mm gauge mark, or when the specimen ceases to burn or glow before the 125 mm gauge mark. MATERIALS CLASSIFIED HBF – Materials classified HBF shall: a) Not have any specimens with a burning rate exceeding 40 mm per minute over a 100mm span, or b) Have each specimen cease to burn before flaming or glowing reaches the 125 mm gauge mark.

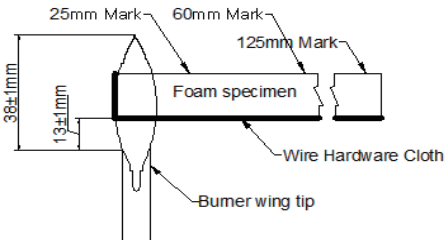
Criteria conditions		HF-1	HF-2
Afterflame time	4/5- Four out of a set of five specimens.	≤ 2 sec	≤ 2 sec
	1/5- Four out of a set of five specimens.	≤ 10 sec	≤ 100 sec
Afterflame time plus after glow time for each individual specimen		≤ 30 sec	≤ 30 sec
Cotton ignition		No	Yes
Damaged length for each individual specimen		≤ 60 sec	≤ 60 sec

Classified HBF shall :

* Not have any specimens with a burning rate exceeding 40mm/min over a 100mm span or
* Have each specimen cease to burn before flaming or glowing reaches the 125mm gauge mark.

Fiaxture





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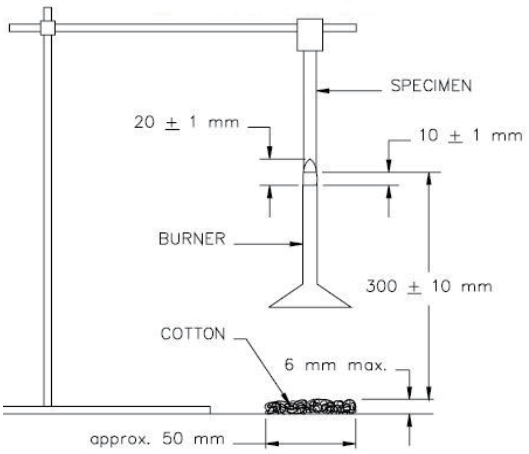
■ UL 94 V Test (Vertical Burning Test)

Con -cept	This is a vertical flame retardant test for the plastic materials.
Speci -mens	20pieces of 150(L) x 50(W) x Min. and Max. thickness covering the thickness range to be considered. Specimens tested by this method are limited to a maximum thickness of 13 mm. Intermediate thicknesses are not to exceed increments of 3.2mm.
Descrip -tion	1. Adjust the burner to produce a blue flame 20mm high. After the application of the flame to the specimen for 10seconds, immediately withdraw the burner at a rate of approximately 300 mm/sec, to a distance at least 150 mm away from the specimen and simultaneously commence measurement of the afterflame time t1 in seconds. Record t1. 2. In the same procedure as above, simultaneously commence measurement of the afterflame time, t2, and the afterglow time, t3. Record t2 and t3. 3. For specimens considered for Class V-0, V-1, V-2, the t1, t2, t3, whether or not burn up to the holding clamp and drip flaming particles that ignited the cotton indicator.
Classi -fied	The following are to be classified fo V-0,1,2 classes :

Criteria conditions	**V-0**	**V-1**	**V-2**
Individual afterflame time, t1 or t2	≤ 10 sec	≤ 30 sec	≤ 30 sec
Total afterflame time for any condition set, t1+t2 for the 5 specimens	≤ 50 sec	≤ 250 sec	≤ 250 sec
Afterflame plus afterglow time for each individual specimen after the second flame application, t2+t3	≤ 30 sec	≤ 60 sec	≤ 60 sec
Burning up to the holding clamp, 125mm	No	No	No
Cotton ignition	No	No	Yes

Fiaxture



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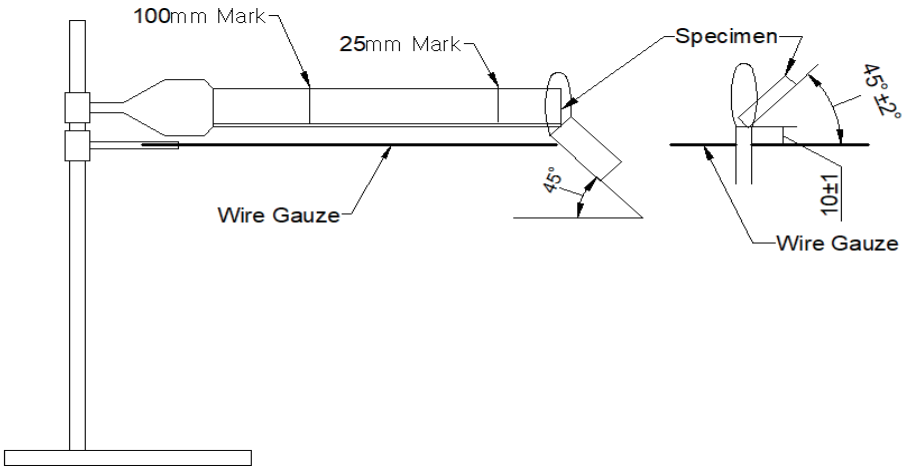
Test Method

■ UL 94HB Test (Horizontal Burning Test)

Con -cept	This is a horizental flame retardant test.
Speci -mens	6pieces of 125(L) x 13(W) x 3mm(T), The 3.0 mm thick specimens are not necessary if the minimum thickness is greater than 3.0 mm, or the maximum thickness is less than 3.0 mm. Specimens tested by this method are limited to a maximum thickness of 13mm and width 13.5mm
Descrip -tion	1. Each specimen is to be marked with two lines perpendicular to the longitudinal axis of the bar, 25mm and 100mm from the end that is to be ignited. 2. Apply the test flame for 30 seconds, the duration of burning(sec), reache the 25 mm and between the 25 mm until flaming or glowing stops or passes the 100 mm gauge mark are to be observed and recorded. (Calculate the linear burning rate, mm/min)
Classi -fied	The following are to be classified fo HB class :
Fiaxture	

Thickness	Burning Rate
≥ 3.0mm	< 40mm/min
< 3.0mm	< 75mm/min