

**TEST REPORT  
UL 94  
CHOMERICS PREMIER™  
CONDUCTIVE PLASTIC**

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Chomerics Approved Signatory:

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**1. INTRODUCTION**

This document is written to report the test methods used to certify PREMIER conductive plastics flammability rating of UL94 V-0 and UL94-5V. All certification testing is performed by Underwriters Laboratory Inc. (UL)

The Standard used is UL 94: Test for Flammability of Plastic Materials for Parts in Devices and Appliances. This is the most widely accepted flammability performance standard for plastic materials. Copies of the UL Standard may be obtained directly from UL at [www.UL.com](http://www.UL.com).

This UL Standard is a method for rating a material's flammability property by measuring and describing it's response to heat and flame under controlled laboratory conditions. Several ratings can be applied based on burn criteria. The testing was performed on Chomerics PREMIER flame retardant materials: A220-FR, A230-FRHF, A240-FRHF.

**2. ADMINISTRATIVE DATA**

2.1. Test Facility

All testing and certification is done by Underwriters Laboratory, Inc. (UL) according to the Standard UL 94: Test for Flammability of Plastic Materials for Parts in Devices and Appliances.

This test report does not represent an endorsement by UL.

The results and/or conclusions within this test report refer and/or apply only to the unit(s) tested as defined by this report.

2.2. Equipment

The following list includes the equipment, per the UL 94 Standard, that is needed to perform the tests.

<b>Test Apparatus</b>	
	Laboratory Fume Hood-
	Laboratory Burner
	Burner Mounting Fixture
	Ring Stands
	Timing Devices -accurate to .5sec
	Measuring Scale - graduated in mm
	Gas Supply – technical grade methane
	Conditioning room/chamber –capable of being maintained at 23+/-2C, 50%RH
	Conditioning Oven-full draft air circulating oven capable of being maintained at 70 +/- 1C
	Micrometer – capable of being read to .01mm
	Cotton – supply of absorbent 100 percent cotton
	Desiccator
	Manometer/Pressure Gage
	Flow meter

### 2.3. Test Personnel

The test is performed by personnel of UL.

### 3. TEST SETUP: UL 94 GENERAL RATINGS

The UL 94 Flammability ratings are intended to provide an indication of a material's ability to extinguish a flame, once ignited. Ratings are primarily differentiated by the testing method. The classification depends on the following factors:

- Sample orientation (horizontal or vertical)
- Burn rate
- Time to extinguish
- Resistance to dripping
- Drip flammability

Each material tested could receive several ratings, depending on color and/or thickness. When specifying a material, the UL rating should always be reported with the thickness to provide meaningful information about the material's characteristics. Summary of the UL 94 rating categories:

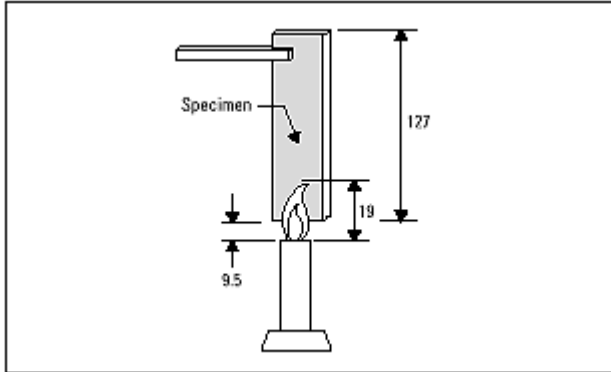
- 5VA (surface burn): Test specimens may not have a burn through (no hole). This is the highest (most flame retardant) UL94 rating.
- 5VB (surface burn): Test specimens may have a burn through (a hole).
- V-0 (vertical burn): Burning stops within 10 seconds. No flaming drips are allowed.
- V-1 (vertical burn): Burning stops within 30 seconds. No flaming drips are allowed.
- V-2 (vertical burn): Burning stops within 30 seconds. Flaming drips are allowed.
- H-B (horizontal burn): Slow burning on a horizontal specimen burning rate. This is the lowest (least flame retardant) UL94 rating.

**4. TEST DESCRIPTIONS FOR CHOMERICS' PREMIER CONDUCTIVE PLASTICS**

PREMIER has been certified for UL94 V-0 and UL94-5VA at specified thicknesses.

**4.1 UL 94 V-0**

Figure 1: UL 94 V-0, V-1, V-2 Vertical Testing Procedure

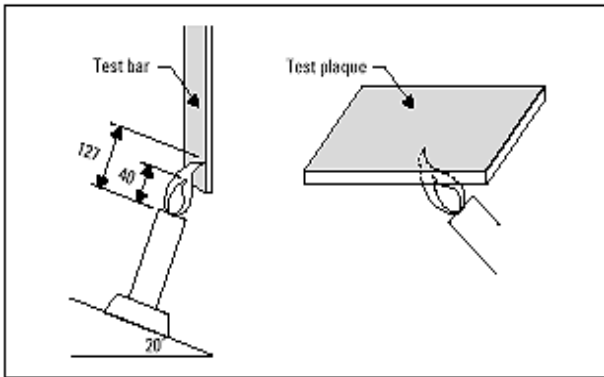


The 94V Vertical Burn Test uses a standard bar specimen which is held at one end in the vertical position. A burner flame is applied to the free end of the specimen for two 10 second intervals separated by the time it takes for flaming combustion to stop after the first application. Two sets of 5 specimens are tested. Burning times, glowing times, when dripping occurs, and whether or not the cotton beneath ignites, are all noted. Flaming drips, widely recognized as a main source for the spread of flames, distinguish V1 from V2.

**4.2 UL 94 5V**

UL 94 5V Vertical Testing Procedure involves 2 steps.

Figure 2: UL 94 5V Vertical Testing Procedure



Step 1: Where a standard flammability bar is mounted vertically and subjected to each of five applications of a 127 mm flame, 5 seconds duration each. In order to pass, no bar specimen may burn with flaming or glowing combustion for more than 60 seconds after the fifth flame application. Also, no burning drips are allowed that ignite the cotton placed beneath the samples. The total procedure is repeated with five bars.

Step 2: Where a plaque of a specified size and preferably the same thickness as the bars is tested in a horizontal position with the same flame. The total procedure is repeated with three plaques. Two classifications result from this horizontal test: 5VA and 5VB. 5VB allows holes (burn through). 5VA does not allow holes.

UL94-5VA is the most stringent of all UL94 tests.

**5. PREMIER CONDUCTIVE PLASTICS UL 94 FLAMMABILITY CERTIFICATIONS**

<b>Material</b>	<b>Rating</b>	<b>Minimum thickness</b>
A220-FR	V-0	1.5 mm
	5VA	1.7 mm
A230-FRHF	V-0	1.5 mm
	5VA	2.5 mm
A240-FRHF	V-0	1.8 mm*
	V-0	3.0 mm
	5VA	3.0 mm

\* A240-FRHF has been tested at Chomerics and passed at 1.8 mm. Testing at UL is underway for certification for V-0 at 1.8 mm.