

**UL94**  
**BURNING TEST Report**

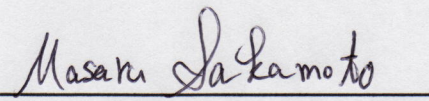
Report Number: 171057  
Date Issued: October 10, 2017

Reported by:

**Chemitox, Inc.**

**Yamanashi Testing Center**

18349 Egusa, Sutama-cho,  
Hokuto-shi, Yamanashi 408-0103 Japan

  
Masaru Sakamoto, Engineer



TESTING CERT  
No: 1136.03

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- ◇ UL Client Agent Program (CAP) – Certificated No. AG160
- ◇ American Association for Laboratory Accreditation – Certificated No: 1136.03

171057ms

**1. Objective:**

We conducted Horizontal Burning Test based on UL94, Edition 6 (Revision Date: 2017-02-27) for the samples described in Item 3 to confirm that the samples comply with expected flammability rating.

**2. Test Date:**

September 26, 2017

**3. Test Specimens:**

The samples were received on: September 21, 2017

Grade Designation: See Table 1

Sample dimension: 125 x 13 x thickness (mm)

**4. Test Results:**

The following Table 1 shows the summary of obtained test results.

**Table 1: Test Results**

<b>Material</b>	<b>Grade Designation</b>	<b>Color</b>	<b>Thickness ,mm (Lot No.)</b>	<b>Desired Flame Class</b>	<b>Test Result</b>	<b>Result</b>
<b>Polyurethane</b>	<b>Flexible Fluorine (ETFE) Resin Tubing</b>	<b>Clear</b>	<b>0.8 (70221 A)</b>	<b>HB</b>	<b>HB</b>	<b>Acceptable</b>
			<b>2.0 (50105 A)</b>	<b>HB</b>	<b>HB</b>	<b>Acceptable</b>

**5. Test Method:**

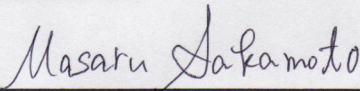
- Test and Classification method :  
UL94,6<sup>th</sup> Ed.( Revision Date: 2017-02-27), Sec.7
- Test Flame: 20mm Blue Flame
- Confirmation of Test Flame:  
The time for the temperature of the copper slug to rise from  $100\pm 2^{\circ}\text{C}$  to  $700\pm 3^{\circ}\text{C}$ :  $44\pm 2$  sec in accordance with ASTM D5207.
- We carried out the HB test by setting the sample so that the fluororesin surface faced upside and the polyurethane surface faced downside based on the client's request.
- Sample conditioning:  
As Received: Specimens were conditioned in accordance with UL 94 at  $23\pm 2^{\circ}\text{C}$  and  $50\pm 10$  % relative humidity for a minimum of 48 hours. Once removed from the conditioning chamber, the test specimens shall be tested within 30 min.

**6. Test Condition:**

Lab Ambient:

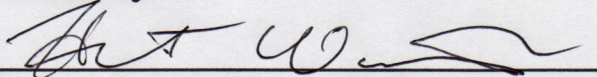
Temperature : 21 °C  
Relative Humidity: 53%RH

**7. Performed by:**



Masaru Sakamoto, Engineer

**8. Reviewed by:**



Hitoshi Watanabe,  
PV • Material Testing Div. Implementation Project Manager

*Note: This test report contains only the results of a single investigation carried out on the product submitted. It may not be copied/reproduced even partly without the written authorization of Chemitox, Inc.*

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Tested by: \_\_\_\_\_ Masaru Sakamoto \_\_\_\_\_ Date 2017-09-26 \_\_\_\_\_

Printed Name \_\_\_\_\_ Signature \_\_\_\_\_

Ref. NO. 171057

**Chemitox**

HORIZONTAL BURNING TEST; HB

UL 94, §7  
 CSA C22.2 No.0.17-00, §4.2.3  
 (ASTM D635, IEC 60695-11-10)

Specimen Review: [✓] Radius < 1.3 mm, Width = 13±0.5 mm, Length = 125±5 mm and edges are smooth.

Preparation of Test Flame:

Gas Flow Rate: 105 mL/min (105±5 mL/min)  
 Back Pressure: 2 mm water (<10 mm water)

[✓] TEST FLAME IS BLUE (YELLOW TIP JUST REMOVED), HEIGHT = 20±1 MM

Specimen No.	Thicknes s mm	Time, t (s)	Damaged Length, L (mm)	X <sub>1</sub>	Burning Rate (mm/min)	Flame Class
Flexible Fluorine (ETFE) Resin Tubing						
Set #:	-	Material:	(Lot No.70221 A)	Color:	Clear	
Test Date:	2017-09-26	Start Time:	11:50	End Time:	12:00	<u>HB</u>
1	0.85	-	-	( 2 )	-	<input checked="" type="checkbox"/> Yes
2	0.86	108	75	( - )	42	<input type="checkbox"/> No
3	0.86	1	1	( 1 )	-	
Flexible Fluorine (ETFE) Resin Tubing						
Set #:	-	Material:	(Lot No.50105 A)	Color:	Clear	
Test Date:	2017-09-26	Start Time:	13:00	End Time:	13:10	<u>HB</u>
1	2.08	-	-	( 2 )	-	<input checked="" type="checkbox"/> Yes
2	2.09	-	-	( 2 )	-	<input type="checkbox"/> No
3	2.06	-	-	( 2 )	-	
Flexible Fluorine (ETFE) Resin Tubing						
Set #:	-	Material:	(Lot No.50105 A)	Color:	Clear	
Test Date:	2017-09-26	Start Time:	13:00	End Time:	13:10	<u>HB</u>
1	2.08	-	-	( 2 )	-	<input type="checkbox"/> Yes
2	2.09	-	-	( 2 )	-	<input type="checkbox"/> No
3	2.06	-	-	( 2 )	-	
Flexible Fluorine (ETFE) Resin Tubing						
Set #:	-	Material:	(Lot No.50105 A)	Color:	Clear	
Test Date:	2017-09-26	Start Time:	13:00	End Time:	13:10	<u>HB</u>
1	2.08	-	-	( 2 )	-	<input type="checkbox"/> Yes
2	2.09	-	-	( 2 )	-	<input type="checkbox"/> No
3	2.06	-	-	( 2 )	-	

Note: Damaged Length (L) equals distance beyond 25 mm reference mark 2017-09-26ms  
 Linear Burning Rate = 60L/t (Not calculated if 25 mm mark not passed)

Observation (X<sub>1</sub>):

- (1) Ceased to burn before the 100 mm reference mark. Materials is HB
- (2) Ceased to burn before the 25 mm reference mark. Materials is HB
- (3) Misc: \_\_\_\_\_

Micrometer: M-299 \_\_\_\_\_ Timer: M-14-37 \_\_\_\_\_ Hood: A-8-7 \_\_\_\_\_

Lab Ambient: 21 °C (25±10°C) and 53 %RH (≤75%RH)

## APPENDIX

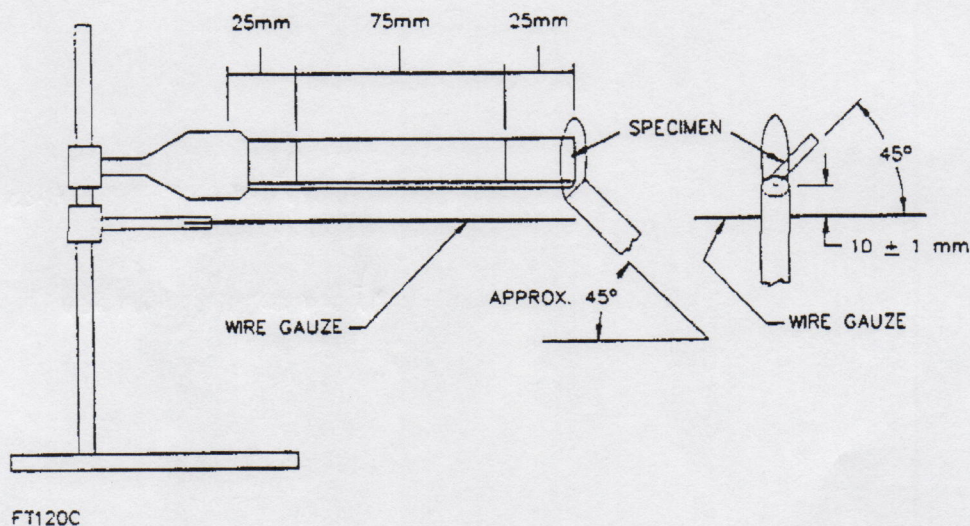
### Horizontal Burning Test

Referenced Standard: ■ UL94 (6<sup>th</sup> Ed. Sec.7)

□ CSA C22.2-92 No. 0.17-00 (Sec. 4.2.3)

□ GB 5169.16-2008 (IEC 60695-11-10 2003-08 Edition 1.1)

1. Sample size :  $125 \pm 5 \times 13.0 \pm 0.5$  mm  $\times$  thickness
2. Procedure (See figure) :
  - 1) Three specimens are to be tested.
  - 2) A blue flame of  $20 \pm 1$  mm is inclined toward the end of the specimen at an angle of  $45 \pm 2^\circ$  to the horizontal. Apply the flame for  $30 \pm 1$  seconds or until the combustion reaches the 25 mm mark.
  - 3) Record the time for the combustion front to travel from 25 mm mark up to the 100 mm mark.



#### Test Criteria

1. Not have a burning rate exceeding 40 mm per minute over a 75 mm span for specimens having a thickness of 3.0 to 13 mm, or
2. Not have a burning rate exceeding 75 mm per minute over a 75 mm span for specimens having a thickness less than 3.0 mm, or
3. Cease to burn before the 100 mm reference mark.
4. If only one specimen from a set of three specimens does not comply with the requirements, another set of three specimens is to be tested. All specimens from this second set shall comply with the requirements in order for the material in that thickness to be classified HB.