



TEST REPORT

Report Number: 170024 Date of Issue: October 29, 2019

Report to:

HAKKO CORPORATION

591-2 Fujikubo, Miyoshimachi, Iruma-Gun, Saitama 354-0041, JAPAN

Prepared by:

Chemitox, Inc., Yamanashi Testing Center

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- Chemitox is accredited by the following agency to ISO/IEC 17025.
 American Association for Laboratory Accreditation (A2LA) Certificated No: 1136.03
- (2) This TEST REPORT refers only to the sample tested, unless stated otherwise.



Date of Issue: October 29, 2019

HAKKO CORPORATION

591-2 Fujikubo, Miyoshimachi, Iruma-Gun, Saitama 354-0041, JAPAN

UL94 HB Flame Test Report

1. Objective

We conducted Horizontal Burning Test in accordance with UL 94 (6th 2016-03-21) "STANDARD FOR SAFETY –Tests for Flammability of Plastic Materials for Parts in Devices and Appliances-".

2. Date of Test

January 19, 2017

3. Description of Test Specimens

The description of the specimens given in Table 1 has been prepared from information provided by HAKKO CORPORATION. This information has not been independently verified by HAKKO CORPORATION. All values quoted are nominal, unless specified.

Table	1	Description o	f	Specimens	

Received on	2017-01-11		
Material	Polyurethane		
Sample Name	Flexible Fluorine (ETFE) Resin SUS Spring Wire Hose (Dissipative Type)		
Lot No.	60921 A		
Nominal Dimension (mm)	125 ± 5 $ imes$ 13.0 ± 0.5 $ imes$ 4.0		

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4. Test Method and Conditioning

Test Method and Conditioning is indicated in Table 2.

Table	2 Test Method and Conditioning		
Test name	Horizontal Burning Test		
Test and Classification method	UL94 Horizontal Burning Test (Refer to the Appendix)		
Test Flame	20 mm Blue Flame		
Sample conditioning	23±2°C and 50±10 % relative humidity for a minimum of 24		
oumple conditioning	hours.		

5. **Test Results**

The following Table 3 shows the summary of obtained test results.

Table 5. Test Result

Material	Sample Name	Lot No.	Color	Thickness (mm)	Desired Flame Class	Test Result*	Results
Polyurethane	Flexible Fluorine (ETFE) Resin SUS Spring Wire Hose (Dissipative Type)	60921 A	Silver	4.0	HB	HB	Pass

*: According to instruction from HAKKO CORPORATION, this test was conducted with the silver side of the sample facing to the burner side (lower side).

6. Test Location

Chemitox, Inc., Yamanashi Testing Center 18349 Egusa, Sutama-cho, Hokuto-shi, Yamanashi-ken 408-0103

7. Performed by

Hump

Takemaru Kunugi, Engineer (Level 2)

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Hitoshi Watanabe, Implementation Project Manager (Level 3)

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(2 Pages)

- UL94 HB Flame test data
- UL94 HB Flame test method

Project No.			File E16	1993	Page	6 of 7
Tested by:		Take	emaru Kunugi		Date	2017-01-19
Ref. NO. <u>1</u>	70024	Print Name		Signatu	re	Chemitox
HORIZONTAL	BURNING TES	Г; НВ			CSA C22.2 No.0.1	UL 94, §7 7-00, §4.2.3
					(ASTM D635, IEC (60695-11-10)
Specimen Re	eview:[✓]]	Radius < 1 edges are	.3 mm, Width smooth.	$h = 13\pm0$.	.5 mm, Length = 1	.25±5 mm and
Preparation	n of Test Fla	ame:				
	Gas F	low Rate:	105	mL/min	(105±5 mL/min)	
[1	Back I	Pressure:		mm wate	r (<10 mm water)	+1 MM
[•]	IESI FLAME .	LS BLUE (I	ELLOW IIP JU	JSI REMOV	(ED), HEIGHI — 20	
			Damaged			
Specimen No.	Thickness (mm)	Time, t (s)	Length, L (mm)	X1	Burning Rate (mm/min)	Flame Class
		Flexible	Fluorine (E	TFE)		
		Resin SUS	S Spring Wir	е		1124
Set #: -	Material:	Hose(Diss	sipative Typ	e) C	olor: Silver	<u><u>HB</u>^</u>
Test Date:	2017-01-19	Start	Time: 9:	30 E.	nd Time: 10:00	🛛 Yes
1	4.17	146	75	(–)	31	
2	4.20	184	75	(–)	24	
3	4.19	116	75	(–)	39	
Set #:	Mate	erial:		C	olor:	HB
Iest Date:	1	Start	IIIme:			T Yes
2				()		-
3				()		No No
				()		-
Set #·	Mate	rial		C	olor.	
Test Date:	11400	Start	Time:	B	Ind Time:	<u>HB</u>
1				()		🗌 Yes
2				()		
3				()		
					<u> </u>	
Set #: Material: Color:						нв
Test Date:		Start	Time:	Ē	Ind Time:	
1				()		L Yes
2				()		
3				()		
					201	7-01-19 tk

*: According to instruction from HAKKO CORPORATION, this test was conducted with the silver side of the sample facing to the burner side (lower side). Note: Damaged Length (L) equals distance beyond 25 mm reference mark

Linear Burning Rate = 60L/t (Not calculated if 25 mm mark not passed) Observation (X_1) :

(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-109	Timer: <u>M-14-27</u>	Hood:	A-8-8
Lab Ambient:	24	°C (25±10°C) and _48	%RH (≤75%RH)	

APPENDIX

Horizontal Burning Test

Referenced Standard: 🗹 UL94 (6th 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 × thickness
- 2. Procedure (See figure) :
 - 1) Three specimens are to be tested.
 - 2) A blue flame of 20 ± 1 mm is inclined toward the end of the specimen at an angle of $45\pm2^{\circ}$ to the horizontal. Apply the flame for 30 ± 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.