

NS Fax No. 155

Date: 8/16/96

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## Test Result Report

1. Testing Item : Testing method is to follow the classification of sealed radioactive source and the classification test which follows the testing method JIS Z4821.
2. Testing Object : The holder mounted with radioactive source that is used for the smoke detector.  
RI holder : Maker : Hochiki Corporation  
Code : A2-93-0172  
  
Inner electrode : Maker : Hochiki Corporation  
Code : A2-93-0163  
  
Radioactive source: Maker : Amersham International plc  
Nucleus : <sup>241</sup>Am  
Radioactivity : 37kBq  
Code : AMMQ-1220
3. Quantity and Recording of Testing Object Number : 8pcs (Testing object numbering : 1~8)
4. Testing Method : Testing method is to follow the classification of sealed radioactive source and the testing method which is described in JIS Z4821.
5. Testing Date : July 19th 1995 to August 16th 1995.
6. Location : 1) Japan Isotope Association  
28-48 Honkomagome 2-chome  
Bunkyo-ku, Tokyo  
  
2) Hochiki Corporation R&D  
246 Tsuruma  
Machida-Shi, Tokyo

## 7. Test Result

Test Item	Temperature	Pressure	Impact	Vibration	Puncture
The classification of performed test	3	2	2	2	2
Judgment	Pass	Pass	Pass	Pass	Pass

For test result details, see the testing record 1~5.

Engineering division  
Chief: Nakamura  
In charge: Hagiwara

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## Testing Record 1

1. Testing Item                      Temperature Test
2. Testing Method                      Testing method is to follow the classification of sealed radioactive source and the class 3 temperature test which is set in the testing method JIS Z4821.
3. Test Equipment
  - (1) Heat insulating device for high temperature: Ikeda Corp. Constant Temperature Style Drier.
  - (2) Cooling Tank : Styrofoam container
  - (3) Thermometer : T style (for low temperature testing)  
R style (for high temperature testing)  
Takeda Riken manufactured DIGITAL MULTI-THERMOMETER
  - (4) Recorder :                      Hokushin Electronics Production Corp. manufactured ANALOG RECORDER
4. Radioactive Measurement Equipment
  - (1) 1 3/4  $\phi$  x 2 Well Type NaI (Tl) Scintillation Counter  
Oyokoken Kogyo Corp. manufactured.
  - (2) Liquid Scintillation Counter  
Aroka Corp. manufactured.
5. Location : Japan Isotope Association
6. In-Charged Personnel : Satoaki Hagiwara/Isotope Dept. Engineer Div.
7. Date : August 14th 1995 ~ August 16th 1995

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## 8. Temperature Test

## 8-1 High Temperature Test

Testing object no.	Testing date	Attained time for test temp	Maintained temperature	Maintained time
7	8/14/95	2 minutes	180C°~190C°	63 minutes
8	8/14/95	2 minutes	180C°~190C°	63 minutes

note: See the attached chart 1 for temperature record.

## 8-2 Low Temperature Test

Testing object no.	Testing date	Attained time for test temp	Maintained temperature	Maintained time
7	8/14/95	3 minutes	minus 40C° ~ -45C°	25 minutes
8	8/14/95	3 minutes	minus 40C° ~ -45C°	25 minutes

note: See the attached chart 2 for temperature record.

## 9. Leakage Test

## 9-1 Wipe test

By using smear filter paper that is moistened with Ethanol, wipe entire surface of the testing object after temperature test is done. Measured Radioactivity which was wiped with smear filter paper by measurement device of (1) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (B q)
High Temperature Test	7	8/16/95	Detected under limit
	8	8/16/95	Detected under limit
Low Temperature Test	7	8/16/95	Detected under limit
	8	8/16/95	Detected under limit

Detection limit : 9 B q (Objected radioactive: <sup>241</sup>Am)

## 9-2 Inundation Test

After temperature test is done, sink the testing object in the distilled water (150 ml) at temperature 40C° for 5 hours. Took 1 ml of the distilled water and measured leaked radioactivity which is contained in the distilled water by measurement device of (2) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (B q)
High Temperature Test	7	8/16/95	Detected under limit
	8	8/16/95	Detected under limit
Low Temperature Test	7	8/16/95	Detected under limit
	8	8/16/95	Detected under limit

Detection limit : 19 B q (Objected radioactive: <sup>241</sup>Am)

From the result of 9-1 and 9-2, leakage from the testing object after temperature test is under 185 Bq.

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Testing Record 2

1. Testing Item            Pressure Test
2. Testing Method        Testing method is to follow the classification of sealed radioactive source and the class 2 pressure test which is set in the testing method JIS Z4821.
3. Testing Equipment
  - (1) Vacuum Pump    Ikeda Rika Corp. manufactured SW-100 style
  - (2) Pressure Gauge   Okano Teraal Production Corp. manufactured U style vacuum meter
4. Radioactivity Measurement Device
  - (1) 1 3/4  $\phi$  x 2 Well Type NaI (TI) Scintillation Counter  
Oyokoken Kogyo Corp. manufactured
  - (2) Liquid Scintillation Counter LSC 1050  
Aroka Corp. manufactured
5. Location            Japan Isotope Association
6. In-Charged Personnel    Satoaki Hagiwara/Isotop Dept. Engineering Div.
7. Date                August 16th 1995

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## 8. Pressure Test

Testing object no.	Testing date	First Trial		Second Trial	
		Pressure	Maintained	Pressure	Maintained
1	8/16/95	160mmHg	5 minutes	160mmHg	5 minutes
2	8/16/95	160mmHg	5 minutes	160mmHg	5 minutes

## 9. Leakage Test

## 9-1 Wipe test

By using smear filter paper that is moistened with Ethanol, wipe entire surface of the testing object after pressure test is done. Measured Radioactivity which was wiped with smear filter paper by measurement device of (1) of 4. The following is the result.

Testing item	Tested object number	Date	Radioactivity (Bq)
Pressure Test	1	8/16/95	Detected under limit
	2	8/16/95	Detected under limit

Detection limit : 9 Bq (objected radioactive:  $^{241}\text{Am}$ )

## 9-2 Inundation Test

After pressure test is done, sink the testing object in the distilled water (150 ml) at temperature 40°C for 5 hours. Took 1 ml of the distilled water and measured leaked radioactivity which is contained in the distilled water by measurement device of (2) of 4. The following is the result.

Testing item	Tested object number	Date	Radioactivity (Bq)
Pressure Test	1	8/16/95	Detected under limit
	2	8/16/95	Detected under limit

Detection limit : 9 Bq (objected radioactive:  $^{241}\text{Am}$ )

From the result of 9-1 and 9-2, leakage from the testing object after pressure test is under 185 Bq.

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Testing Record 3

1. Testing Item      Impact Test
2. Testing Method    Testing method is to follow the classification of sealed radioactive source and the class 2 impact test which is set in the testing method JIS Z4821.
3. Test Equipment
  - (1) Hammer the mass : 50g
  - (2) Iron floor
  - (3) Hammer Guide
4. Radioactivity Measurement Device
  - (1) 1 3/4  $\phi$  x 2 Well Type NaI (Tl) Scintillation Counter  
Oyokoken Kogyo Corp. manufactured
  - (2) Liquid Scintillation Counter LSC 1050  
Aroka Corp. manufactured
5. Location          Japan Isotope Association
6. In-charged Personnel    Satoaki Hagiwara/Isotope Dept. Engineering Div.
7. Date    August 10th 1995 - August 16th 1995

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## 8. Impact Test

Testing object no.	Testing date	Distance to the end of the hammer
3	8/10/95	1 m
4	8/10/96	1 m

## 9. Leakage Test

## 9-1 Wipe test

By using smear filter paper that is moistened with Ethanol, wipe entire surface of the testing object after impact test is done. Measured Radioactivity which was wiped with smear filter paper by measurement device of (1) of 4. The following is the result.

Testing item	Tested object number	Date	Radioactivity (Bq)
Impact Test	3	8/11/95	Detected under limit
	4	8/11/95	Detected under limit

Detection limit : 9 Bq (objected radioactive:  $^{241}\text{Am}$ )

## 9-2 Inundation Test

After impact test is done, sink the testing object in the distilled water (150 ml) at temperature  $40\text{C}^\circ$  for 5 hours. Took 1 ml of the distilled water and measured leaked radioactivity which is contained in the distilled water by measurement device of (2) of 4. The following is the result.

Testing item	Tested object number	Date	Radioactivity (Bq)
Impact Test	3	8/16/95	Detected under limit
	4	8/16/95	Detected under limit

Detection limit : 19 Bq (objected radioactive:  $^{241}\text{Am}$ )

From the result of 9-1 and 9-2, leakage from the testing object after impact test is under 185 Bq.

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#### Testing Record 4

1. Testing Item                      Vibration Test
2. Testing Method                  Testing method is to follow the classification of sealed radioactive source and the class 2 vibration test which is set in the testing method JIS Z4821.
3. Testing Equipment  
  - (1) Vibration Devices    IMV Corp. manufactured    Vibration System CV-300-2
4. Radioactivity Measurement Device  
  - (1) 1 3/4  $\phi$  x 2 Well Type NaI (Tl) Scintillation Counter  
Oyokoken Kogyo Corp. manufactured
  - (2) Liquid Scintillation Counter LSC 1050  
Aroka Corp. manufactured
5. Location : Hochiki Corporation (Vibration Test)  
Japan Isotope Association (Leakage Test)
6. In-charge Personnel    Hochiki Corporation : Yoshimi Kawabata (Vibration test)  
Japan Isotope Association : Satsuki Hagiwara (Leakage test)
7. Date                      July 19th 1995 ~ July 27th 1995

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**8. Vibration Test**

Hochiki Corporation performed vibration test on the testing object no.1 and no. 2 and Japan Isotope Association performed leakage test on the testing object no. 1 and no.2.

**9. Leakage Test****9-1 Wipe test**

By using smear filter paper that is moistened with Ethanol, wipe entire surface of the testing object after vibration test is done. Measured Radioactivity which was wiped with smear filter paper by measurement device of (1) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (B q)
Vibration Test	1	7/27/95	Detected under limit
	2	7/27/95	Detected under limit

Detection limit : 9 B q (objective radioactive:  $^{241}\text{Am}$ )

**9-2 Inundation Test**

After vibration test is done, sink the testing object in the distilled water (150 ml) at temperature 40C° for 5 hours. Took 1 ml of the distilled water and measured leaked radioactivity which is contained in the distilled water by measurement device of (2) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (B q)
Vibration Test	1	7/27/95	Detected under limit
	2	7/27/95	Detected under limit

Detection limit : 19 B q (objective radioactive:  $^{241}\text{Am}$ )

From the result of 9-1 and 9-2, leakage from the testing object after vibration test is under 185 Bq.

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Testing Record 5

1. Testing Item           Puncture Test
2. Testing Method       Testing method is to follow the classification of sealed radioactive source and the class 2 puncture test which is set in the testing method JIS Z4821.
3. Testing Equipment
  - (1) Hammer and Pin     The mass : 1g
  - (2) Iron Floor
  - (3) Hammer guide
4. Radioactivity Measurement Device
  - (1) 1 3/4  $\phi$  x 2 Well Type NaI (Tl) Scintillation Counter  
Oyokoken Kogyo Corp. manufactured
  - (2) Liquid Scintillation Counter LSC 1050  
Aroka Corp. manufactured
5. Location           Japan Isotope Association
6. In-charged Personnel   Satosaki Hagiwara/Isotope Dept. Engineering Div.
7. Date               August 10th 1995 ~ August 16th 1995

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## 8. Puncture Test

Testing object number	Date	Distance to the tip of the pin
5	8/10/95	1 m
6	8/10/95	1 m

## 9. Leakage Test

## 9-1 Wipe test

By using smear filter paper that is moistened with Ethanol, wipe entire surface of the testing object after puncture test is done. Measured Radioactivity which was wiped with smear filter paper by measurement device of (1) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (Bq)
Puncture Test	5	8/11/95	detected under limit
	6	8/11/95	detected under limit

Detection limit : 9 Bq (objected radioactive:  $^{241}\text{Am}$ )

## 9-2 Inundation Test

After puncture test is done, sink the testing object in the distilled water (150 ml) at temperature  $40\text{C}^\circ$  for 5 hours. Took 1 ml of the distilled water and measured leaked radioactivity which is contained in the distilled water by measurement device of (2) of 4. The following is the result.

Testing Item	Tested object number	Date	Radioactivity (Bq)
Puncture Test	5	3/16/95	detected under limit
	6	3/16/95	detected under limit

Detection limit : 1 Bq (objected radioactive:  $^{241}\text{Am}$ )

From the result of 9-1 and 9-2, leakage from the testing object after puncture test is under 185 Bq.

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VIA:

CC:

FROM: G. Shinozaki

Please find attached a translated version of the information you requested. A copy has also been sent to Doug Broadus. I hope this will suffice!! Please give me a call and let me know what that status is. Thanks for your help.

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