

# HASACONI QF2062 LOW RESIDUE NO CLEAN FLUX

As this is a new product, contents in this document will be updated again within  $\frac{1}{2}$  year.

### INTRODUCTION

We take pride in providing our clients with quality products. This is evident in our research and development efforts to consistently improve our products. QF2062 is a newly formulated low solid content RMA flux suitable for lead free applications. The flux leaves a very thin transparent coat, which not only protects the board surface but also gives it additional aesthetic values. This flux has been formulated such that no solder balls are formed and bridging are minimised.

### **SPECIFICATIONS (PRELIMINARY)**

Item	Specifications	Test Standards	
State	Liquid	Visual	
Colour	Colourless	Visual	
Specific Gravity @ 25°C	0.805 +/- 0.005	JIS Z 3197: 1999 8.2.2	
Non-volatile Solid Content (110°C, 1hr)	4.0 +/- 0.5 wt%	JIS Z 3197: 1999 8.1.3	
Halide Content	0 wt%	IPC-TM-650 2.3.35B JIS Z 3197: 1999 8.1.4.2.2	
Acid Value Test	20.0 +/- 1 mg KOH/g JIS Z 3197: 1999 8.1.4.1 flux		
Water Extract Resistivity	>1 x 10 <sup>4</sup> Ω-cm	JIS Z 3197: 1999 8.1.1	
Surface Insulation	>1 x 10 <sup>8</sup> Ω	IPC-TM-650 2.6.3.3	
Resistance	>1 x 10 <sup>11</sup> Ω	JIS Z 3197: 1999 8.5.4	
Copper Corrosion Test	Pass	IPC-TM-650 2.6.15	
		JIS Z 3197: 1999 8.4.1	
Copper Mirror Test	Classified as "M",	IPC-TM-650 2.3.32	
	Pass	JIS Z 3197: 1999 8.4.2	
Flux Activity	ROM0	IPC J-STD-004A	
Classification			
Spread Factor	>75% (SnCu)	JIS Z 3197: 1999 8.3.1.1	
Residue Dryness Test	Dry	JIS Z 3197: 1999 8.5.1	
Surface Finish	Shiny	Visual	

#### **APPLICATIONS**

QF2062 is specially formulated for spraying as well as foaming and dipping process. Recommended onboard preheat temperature is 90 – 110 °C.

#### **RESIDUE REMOVAL**

Since the residues are minimal and non-corrosive, removal is usually not required. If cleaning is required, the flux residue could be removed by any solvent or aqueous flux cleaner available in the market.

#### **RECOMMENDED SOLVENT**

Asahi's complementary Solvent #2000. Solvent can be stored for about 1 year under normal storage conditions of 25°C.

#### SAFETY

Observe standard precautions for handling and use, such as well-ventilated areas and avoidance of prolonged or repeated contact with the skin. For more information, please refer to the Material Safety Data Sheet.

#### STORAGE

Under normal storage conditions of 30°C, QF2062 can be stored for up to 6 months. QF2062 is flammable. Keep away from all sources of heat, sparks, flame and sunlight.

#### PACKAGING

Available in 18kg/carboy.

#### SINGAPORE ASAHI CHEMICAL & SOLDER INDUSTRIES PTE LTD

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### **TEST ANALYSIS**

Various tests were conducted to evaluate the performance and reliability of QF2062 to assure our customers of the effectiveness and safety of the flux.

### Non-volatile Solid Content

This test qualifies the percentage of solid content in the flux.

Method:

- Weigh 10 grams of flux onto a petri dish.
- Place sample in oven set at 110°C.
- Measure weight of remaining sample after 1hr.
- Calculate solid content accordingly.

#### Result:

Solid Content = 4.0 wt%.

### **Halide Content**

This test is to determine the amount of halides present in the flux.

### Method:

By titration method with end point determination. The % chlorides is calculated based on the following formula:

Halides, as % Chlorides = <u>3.55 VN x 100</u> ms

Result:

Halide Content = 0 wt%.

# Acid Value

This test evaluates the content of acid in flux by acid value.

Method:

- Measure 10 to 20ml of specimen using a pipette into a flask. Add 100ml ethanol.
- Add 3 drops of phenolphthalein into the test specimen and put the flask on a magnetic stirrer.
- Titrate by N/10 potassium hydroxide (ethanol solution) until the point which light pink colour appears and does not disappear for 30 secs. This shall be the endpoint.

The acid content is measured by the following formula:

$$A_{v} = \frac{56.11 \times V_{k} \times M_{k}}{m \times d}$$

- A<sub>v</sub>: Acid Value of flux
- V<sub>k</sub>: Volume of potassium hydroxide (ml)
- M<sub>k</sub>: Molarity of potassium hydroxide (M)
- m: Volume of specimen (ml)
- d: Specific gravity of specimen

### Result:

Acid Value: 20.05 mg KOH/g flux.

# Water Extract Resistivity

This test measures the corrosiveness of the flux.

### Method:

- $\bullet$  Take an amount of the flux containing solid portion equivalent to 0.05  $\pm$  0.005g as the sample.
- Put the sample in a beaker with 50 ml of purified water. Cover the beaker with a watch glass.
- Heat and boil it for about 5 mins, and further continue heating for about 1 min.
- Cool the beaker for about 10 secs at room temperature, then place beaker in a water bath of about 20°C to obtain the test solution, immediately measure the resistance of this water solution using a conductivity meter.

# Result:

The water extract resistivity is  $1.05 \times 10^5 \Omega$ -cm, which exceeds the minimum requirement specific resistance of  $1.0 \times 10^4 \Omega$ -cm.

# Surface Insulation Resistance (SIR)

:

It determines the surface insulation properties of the flux on the finished product. Thus, it determines the reliability of the residue if left on board without cleaning.

# Method I

Standard : IPC-TM-650 2.6.3.3

Conditions

Temperature	:	85°C
Humidity	:	85 %RH
Applied Voltage	:	+50V Biased
Test Voltage	:	-100V D.C.
Test Coupon	:	IPC B-24 coupon
Duration	:	1000hrs



Test Coupon: "Typical Comb Pattern" (IPC-B-24 coupon)

# Result:



Surface Insulation Resistance: >  $1 \times 10^{12} \Omega$ , passed.

Method II

Standard :

JIS Z 3284: 1994 Annex 14

Conditions :



# Result:



Surface Insulation Resistance: >  $1 \times 10^{12} \Omega$ , passed.

# Copper Corrosion Test

This test provides a visual check on the corrosive effect of the flux on the substrate after high humidity conditioning.

### Method:

- Place one drop of test flux onto the copper plate.
- Keep copper plate at  $40 \pm 2^{\circ}$ C 90 %RH for 96hrs.
- Remove test flux by immersion in clean 2-propanol.

# Result:

No presence of green compounds or any other signs of corrosion found on the residue of QF2062.

# **Copper Mirror Test**

This test provides a visual check on the corrosive effect of the flux on the substrate.

# Method:

- Place one drop of test flux onto the copper mirror.
- Keep copper mirror at  $23 \pm 2^{\circ}$ C &  $50 \pm 5$  %RH for 24hrs.
- Remove test flux by immersion in clean 2-propanol.

# Result:

The results showed that QF2062 is classified as "M".

### **Spread Test**

This test analyses the flux ability to wet and spread on the surface of a treated Cu coupon.

Method:

- Coil solid solder wire around a 3 mm mandrel and cut into individual rings to make preforms.
- Place one drop (0.05ml) of flux in centre of a preform on a test coupon.
- Place test coupon on hot plate for 15 secs.
- Determine Spread Factor where D = (D H) / D x 100%
  Diameter used when the solder is assumed to be a sphere, 1.24 x V<sup>1/3</sup>
  V = Mass / Specific Gravity
  H = Height of Spread Solder

Result:

Spread Test = 80.5% (SnCu).

### **Residue Dryness Test**

This test analyses the tackiness of the flux residue.

Method:

- Scatter the powder talc over the flux residue on the copper plate.
- Leave copper plate for 10 to 20 secs.
- Gently brush off twice the surface of residue.

#### Result:

No talc powder found in the flux residue. The flux has passed the dryness test.

DISCLAIMER OF LIABILITY

"All statements, information and recommendations contained in this catalog are based on data and test results which we consider, to the best of our knowledge and belief, to be reliable and informative to the users but the accuracy and completeness thereof is not guaranteed. No warranty, expressed or implied, statutory or otherwise, is given regarding the use of the information and products contained in this catalog since the conditions and suitability for use, handlings, storage or possession of the products are determined by the users and are therefore beyond our control. We shall not be liable in respect of any liabilities, losses (including consequential losses), damages, proceedings, costs, claims or injuries whatsoever sustained or suffered by the users (including any third parties) in connection with the use of the information and the products contained in this catalog."

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