www.ko-ki.co.jp
TF-51001E-0
Prepared on Jul. 01, 2013

Koki no-clean LEAD FREE tack flux

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

Halogen FREE tack flux TF-MP2

Product information

This Product Information contains product performance assessed strictly according to our own test procedures and may not be compatible with results at end-users.

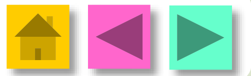
TF-MP2

Product features

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

- Designed for BGA / CSP reflow and repair applications
- Conforms to Halogen-free standard (Cl + Br: below1500ppm) EN-14582
- No clean / ROL0
- Ensures high post soldering reliability



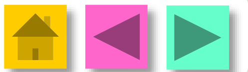
Specifications

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

Application	Repair
Product	**TF – MP2**
Halogen content*[1]	0
Flux type*[2]	ROL0
Viscosity (Pa.s)*[3]	10 ± 5
Copper plate corrosion*[4]	Passed
Tack time	> 24 hours
Shelf life (below 10°C)	6 months

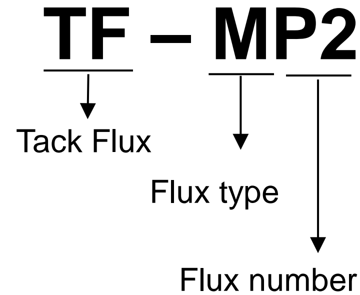
1. Halogen content: BS EN 14582 (Halogen free standard)
2. Flux type : According to IPC J-STD-004A
3. Viscosity : Malcom spiral type viscometer,PCU-205 at 25ºC 10rpm
4. Copper plate corrosion: In accordance with IPC J-STD-004A



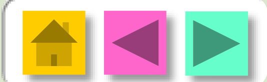
Specifications – Flux selections

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide



Flux type	**M** : Low halide, halide free
Flux number	Solids and solvents used



Halogen content

Contents

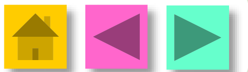
Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

- Test method : A: IPC-TM650 2.3.28.1
  B: BS EN14582
- Measurement instrument: ICS-1500 (DIONEX)
  AQF-100 (MITSUBISHI CHEMICAL ANALYTECH)

Halogen content (wt%)

Method	A	B
Cl	ND	ND
Br	ND	ND

*ND : < 5 ppm

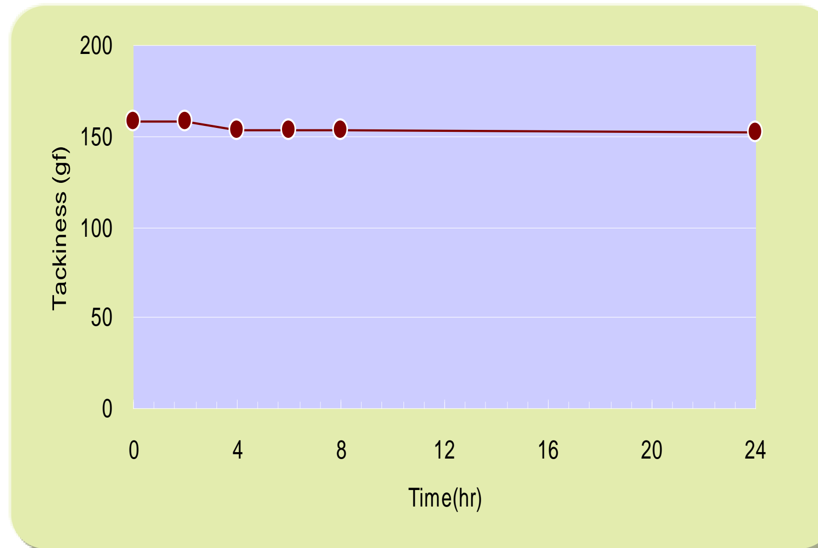


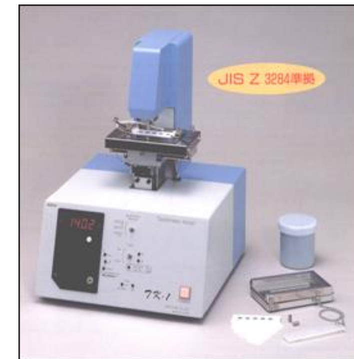
Tack time

Contents

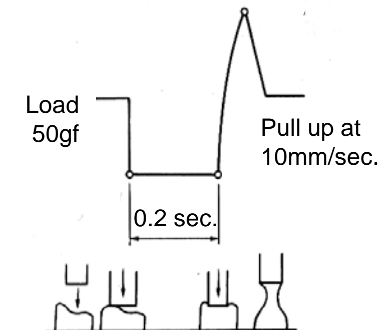
Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

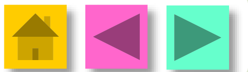
• Stencil :	0.2mm (8 mils) thick, 0.6mm dia. aperture
• Measurement instrument :	Malcom tackimeter TK-1
• Probe pressure :	50gs
• Pressurizing time :	0.2mm
• Pull speed :	10mm/sec.
• Test method :	In accordance with JIS Z 3284
• Test environment :	25+/-1°C, 60+/-10%RH





Tensile strength = Tack force





Unique solvent system successfully assures sufficient tack time.

Solder spreadability

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

Solder : Sn96.5, Ag3.0, Cu0.5

Test plate : phosphor deoxidized copper plate (specified in JIS-H-3100) 0.3 x 50 x 50mm polished by #600 abrasive paper with alcohol dropped and washed by alcohol.

Test method : JIS Z 3197

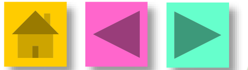
Place the solder powder on the test plate, and drop 0.05g of the flux. Then, heat it at 250±5ºC on the solder bath and melt it for about 30 sec. After reaching the said temperature, spread the solder over the plate.

After cooling it at ordinary temperature, remove the residual flux with alcohol, and measure the height of solder by a hygrometer and calculate the rate of spread from the following formula :

$$S = \frac{D - H}{D} \times 100$$

S : Rate of solder spreading (%)
H : Height of spread solder (mm)
D : Diameter when the solder used is assumed to be as a sphere (mm)
D = 1.24 x (weight of solder/specific gravity of solder)

n	Rate of solder spreading (%)	
1	78.1	Average: 75.9
2	76.5	
3	77.3	
4	74.6	
5	72.9	



Copper mirror test

Contents

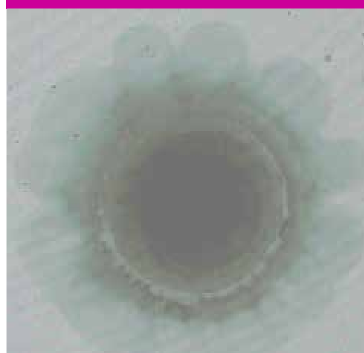
Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

- Test conditions : 23±2ºC 50±5%RH for 24 hours
- Test method : IPC J-STD-004A

Definition

Category L :	No evidence of mirror breakthrough.
Category M :	Breakthrough in less than 50% of test area.
Category H :	Breakthrough in more 50% of test area.

TF-MP2



Category: L

WW class rosin 35%

Category: L

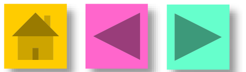
Copper plate corrosion

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

- Test conditions : 40±2ºC 90~95%RH for 240 hours
- Test method : IPC J-STD-004A

No evidence of corrosion can be observed.



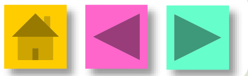
Electromigration

Contents

Features
Specifications
Halogen content
Tack time
Solder spreadability
Copper mirror
Copper plate corrosion
Electromigration
Handling guide

- Test conditions : 85±2ºC x 85%RH for 596 hours
- Stencil thickness : 150 micron (6 mils)
- Comb type electrode : JIS type-II
- Measurement voltage : DC100V
- Voltage applied : DC10V (96hours~)
- Test method : IPC J-STD-004A

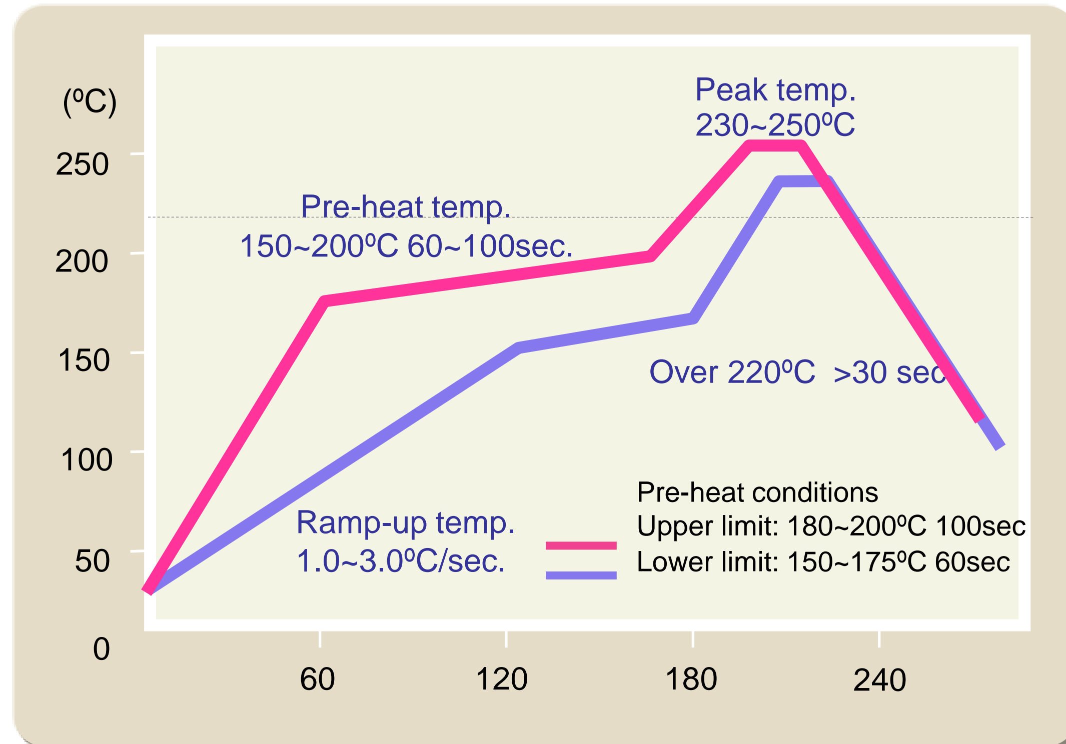
No evidence of electromigration can be observed.



Handling guide - Recommended reflow profile

Contents

- Features
- Specifications
- Halogen content
- Tack time
- Solder spreadability
- Copper mirror
- Copper plate corrosion
- Electromigration
- Handling guide



Excess pre-heating (time & temperature) may cause too much oxidation.
Relatively short and low pre-heat may be recommendable, especially for fine pitch/micro pattern components. This profile is recommended for SAC305.