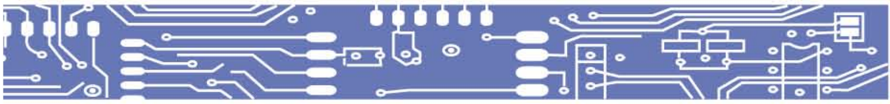
ECO+PLUS® series
Lead Free SOLUTIONS you can TRUST



Halogen Free Lead Free Solder Paste

S3X48-M410A

Significant **REDUCTION** of **HALOGEN** from the flux formulation helps to prevent environmental pollution.

Ensures **ROBUST SOLDERING** performance, equivalent to halogen containing conventional solder pastes.

Ensures **OUTSTANDING PRINTING QUALITY** even with super fine pitch and CSP applications.

Background of development

Recent increasing consciousness about ecology on a global scale, has started considerations for the restriction of certain elements within soldering materials used within the electronics industry.

Ever since it's been reported that dioxins can be generated when specific kinds of halide are combusted, there have been moves afoot to eliminate halogens from soldering materials, such as solder pastes and wave soldering fluxes.

Koki's research and development team have been working on this "halogen free" issue for many years and provided various products already. **S3X48-M410A(S3X70-M410A)** is the latest and fully developed product as a true "halogen free" solder paste.

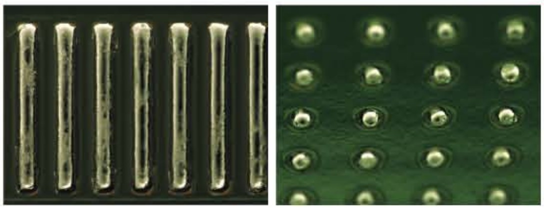
Substance	Permissible limit (by weight)
Bromine (Br)	≤900 ppm (0.09%)
Chlorine (Cl)	≤900 ppm (0.09%)
Total concentration of Cl+Br	≤1500 ppm (0.15%)

Solder wetting

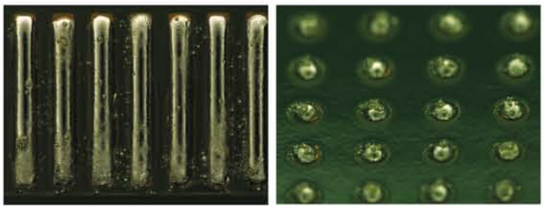
Whilst containing almost no halogen and meeting the above indicated permissible limits, **S3X48-M410A** successfully achieves powerful solder wetting performance. In terms of performance, it can be equivalent to that of conventional halogen containing lead free solder pastes.

*0.4mm pitch / 0.25mm pad dia.

S3X48-M410A



Trial product (no halogen)

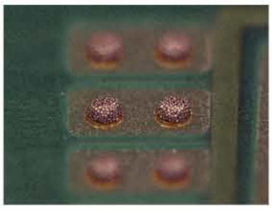


Applicable for 0402 (01005) chip / S3X70-M410A

As a variation, 10-25 μ m solder powder type solder paste is also available. The product number is **S3X70-M410A**. S3X70-M410A is designed to cope with 0402 (01005) chip pattern without requiring a nitrogen atmosphere reflow.

Compete melting is achieved as the photo right shows.

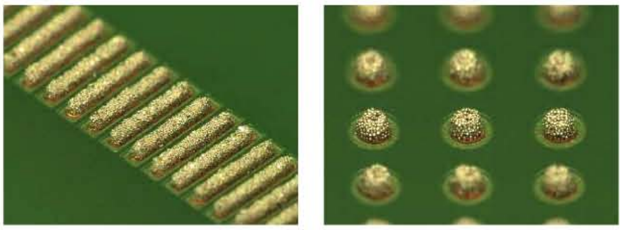
0.18mm pad dia.



0402 (01005) chip

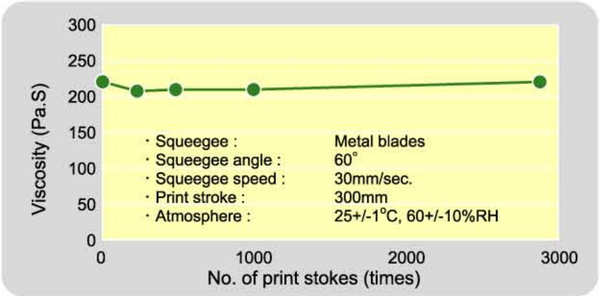
Stencil idle time

(1st print after 60min. of idle time)

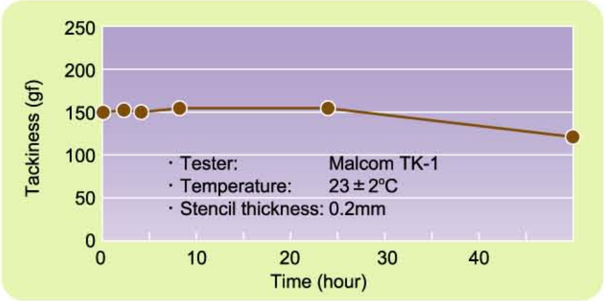


0.4mm pitch 0.3mm diameter

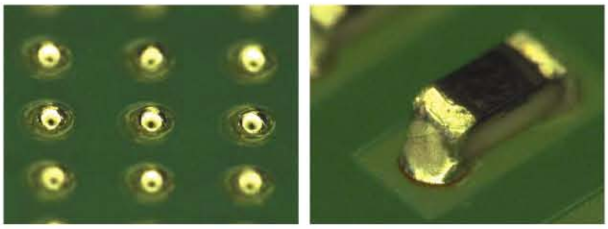
Viscosity variation in continual print



Tack time



Solder wetting



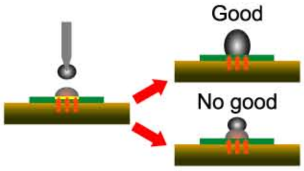
0.3mm dia. CSP pattern 0603(0201) chip (100Sn)

OSP board (after 4-hour kneading on stencil)

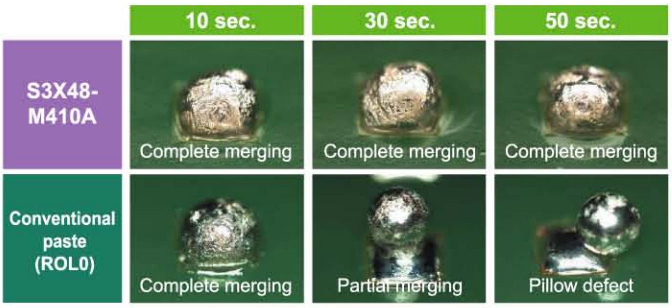
Anti-pillow defect

Significant enhancements in the heat resistance of the flux and wetting reaction speed have succeeded in reducing the occurrence of hidden pillow defect.
S3X48-M410A ensures a robust wetting action to BGA bumps even with intentional extra oxidation.

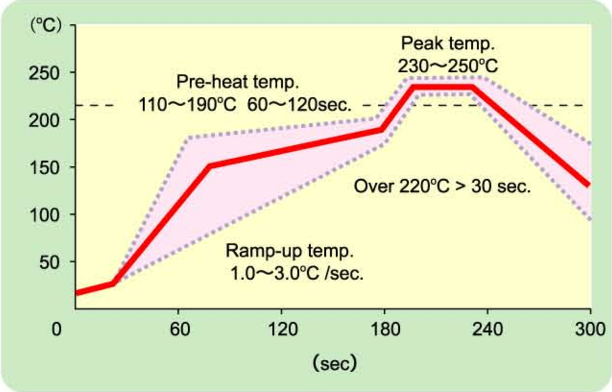
- Stencil : 0.12mm thickness, 100% aperture to pad size
- Pad : 0.8 x 0.8mm chip pad
- Solder ball : Sn3Ag0.5Cu, 0.76mm diameter
- Test procedure : Melt solder paste on hot plate and drop solder ball at every 10sec.



Drop solder ball every 10 sec. after the solder paste has melted to see heat durability of flux.



Recommended reflow profile



*Unless specified Product performances indicated are of S3X48-M410A.

Specifications

Application		Printing - Stencil	
Products		S3X48-M410A	S3X70-M410A
Alloy	Alloy Composition (%)	Sn96.5, Ag3.0, Cu0.5	
	Melting point (°C)	217 - 219	
Flux	Particle size (μm)	20 - 45	10 - 25
	Flux Halide content (%)	0.0	
Product	Flux type	ROL0 (*ANSI/J-STD-004A)	
	Product Flux content (%)	11.8	12.0
	Viscosity (Pa.S)	220	220
	Copper plate corrosion	Passed	
	Tack time	> 48 hours	
	Shelf life (below 10°C)	6 months	

*Specifications are subject to change.

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