

Low Silver High Strength Solder Alloy

SJM Series

- Vietnam Pros Technology Co., Ltd

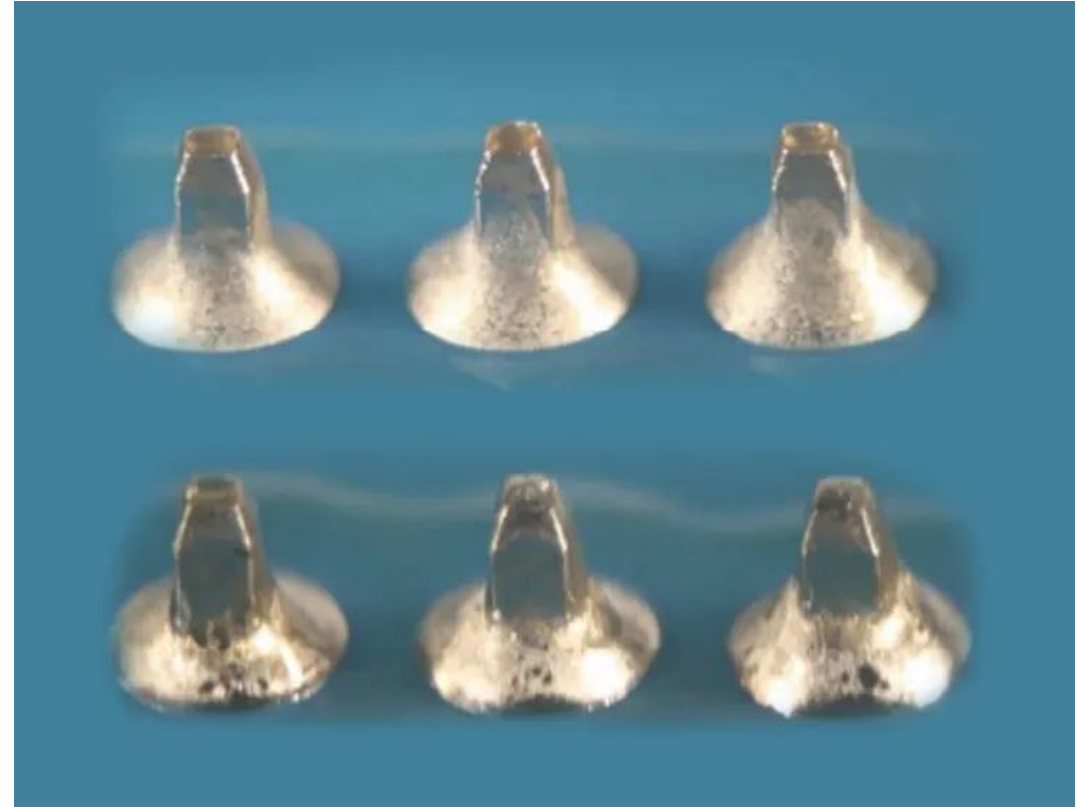


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01

OVERVIEW

Additive elements and its effect

SJM Series

| Alloy name | Advantage | Disadvantage |
|--------------|---|-------------------|
| Bi (Bismuth) | Due to Solution hardening phenomenon, harden alloy, improves thermal strength while lower the melting point | Become brittle |
| Fe (Iron) | <ul style="list-style-type: none"> • Harden alloy • Prevent from iron-tip erosion | Lower wettability |
| Ga (Gallium) | Prevents oxidation | |

The amount to be added to solder is examined based on characteristic of above each elements

(ex.) Bi: 2% Fe: 0.01 ~ 0.035%

02 | ALLOY STRENGTH

EPMA Analysis (Solder Filet)

Alloy Strength

Sn

Ag

Cu

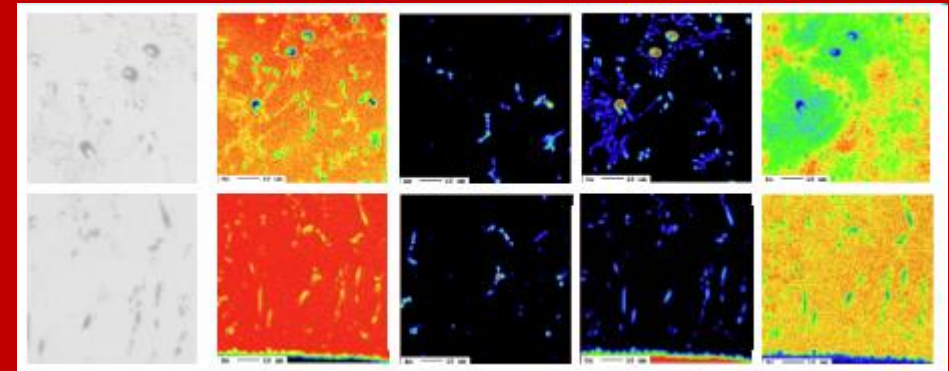
Bi

SJM-03

Bi dispersed
after thermal
cycling

Initial

After 1500 cycle

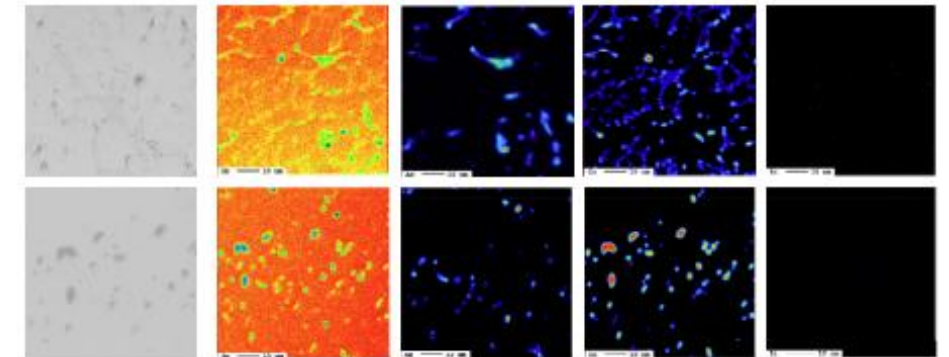


SAC0307

Without Bi
additive

Initial

After 1500 cycle



03

**THERMAL FATIGUE
STRENGTH**

Shear examination

Thermal fatigue strength - SJM vs other alloy



Thermal Cycle Condition
-40°C ~ +85 °C



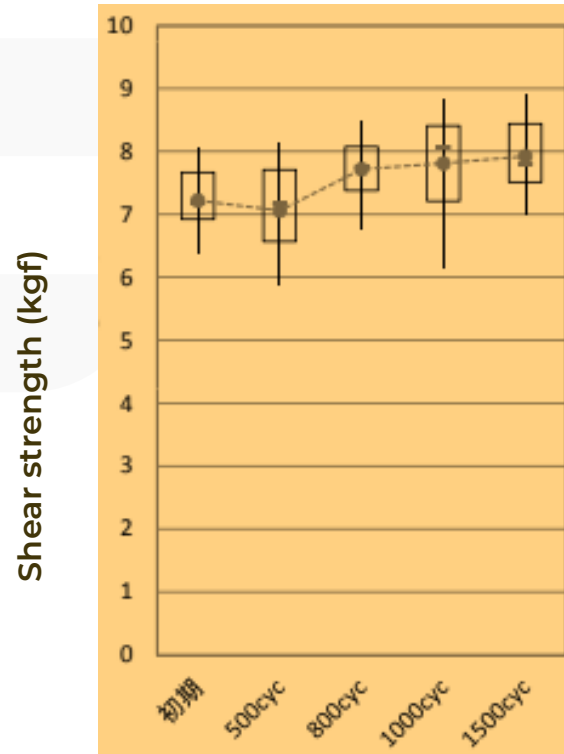
Soak Time
30min



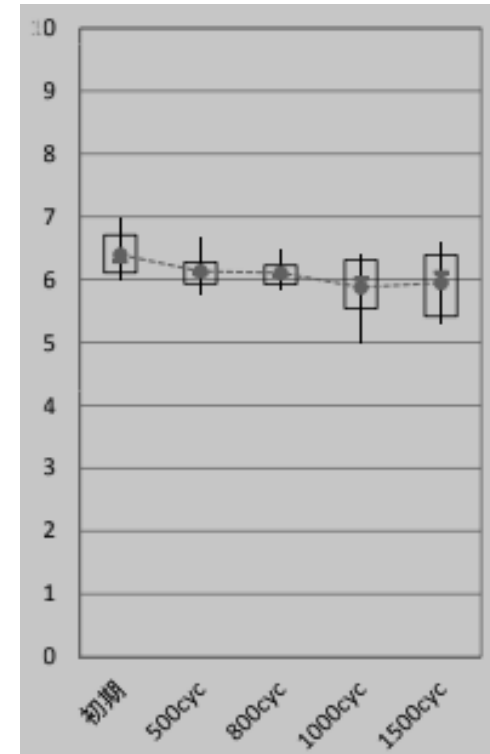
Component
3216 chip resister
(metric scale)



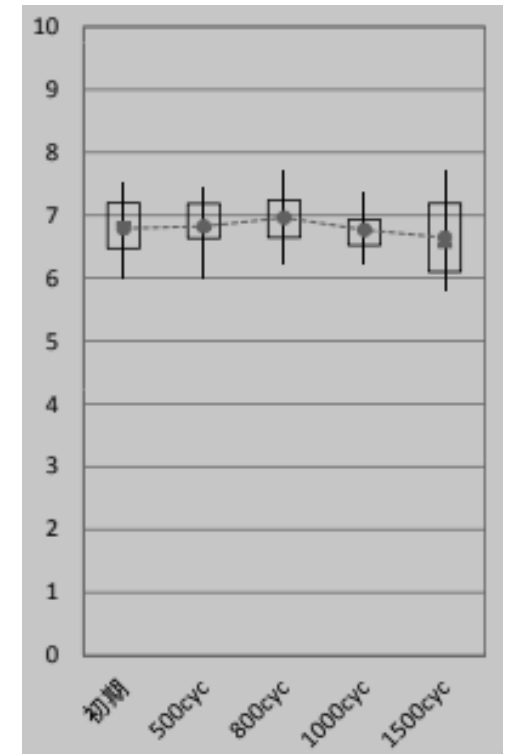
Shear Test procedure
set shear strength tester
to **1mm/min** condition



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SAC0307

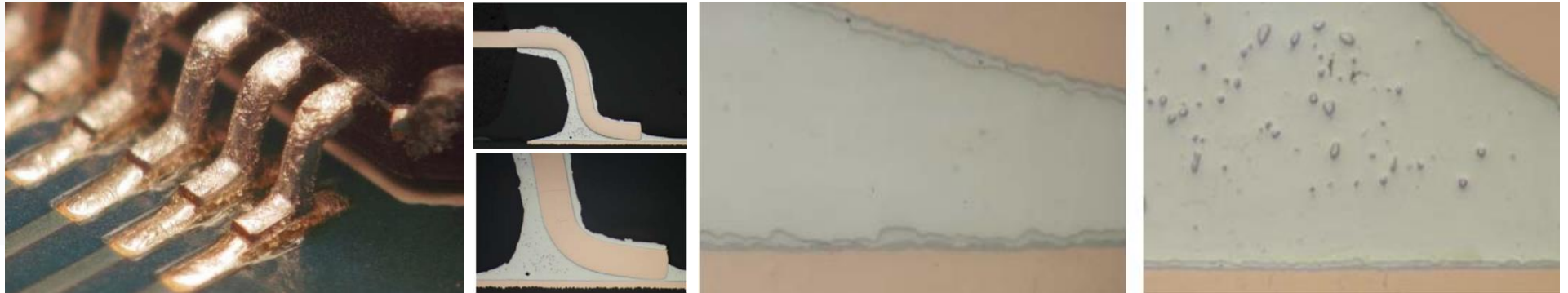


SAC305

X-section after -40 +125°C 1000 cycles

Thermal fatigue strength - SJM vs other alloy

SJM - 03



SAC305



04

**PRODUCT
INFORMATION**

Effect on solder for anti iron tip wastage

Low silver high strength strength core solder

Trace additives in SJM prevent from **iron tip wastage** which extends life of iron tip, Providing cost reduction and stability of soldering process quality.

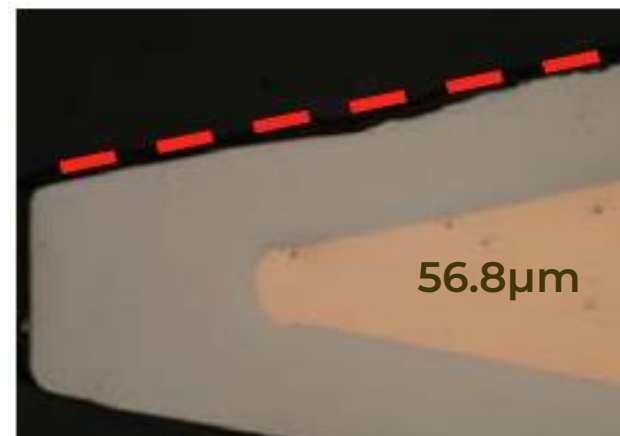
- Equipment Japan Unix UNIX-412
- Solder feeding amount 5mm/shot
- Feeding Speed 10mm/shot
- Pull speed 10mm/shot
- Cont. 20000 shots

Initial

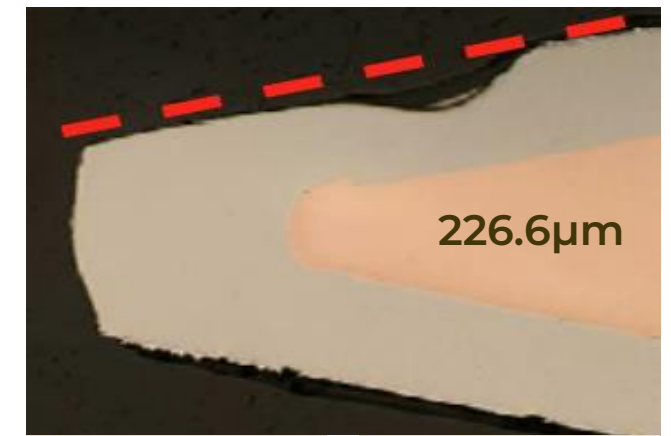


Test result erosion depth (μm)

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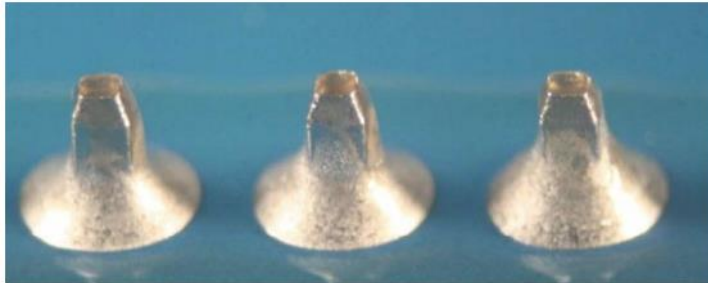


SAC305



Outward appearance after soldering

Low silver high strength strength core solder



SJM - 03

Dim finish in overall



SAC307

Dim but slightly shiny



SAC305

Separates to shiny area and dim finish area on solder file.



Thank you!

Please contact us for full report

From Pros Technology