TECHNICAL DATA SHEET

# ALPHA®WSX 9200

Water Soluble - Halogen Free - High Activity - High Viscosity Flux for Semiconductor Ball-Attach

## DESCRIPTION

**ALPHA WSX 9200** water soluble halide free flux is engineered to be used in the attachment of lead-free or tin-lead eutectic spheres onto BGA or CSP components.

ALPHA WSX 9200 has also been designed to have excellent rolling stability on stencils for ball drop on fine pitch CSP components and wafer WLCSP applications.

It is highly compatible with Cu-OSP, electrolytic Ni-Au and ENEPIG pad finishes with best-in-class fluxing activity resulting in maximized yield.

## FEATURES AND BENEFITS

- Excellent Wettability
- Halide-free Formulation
- Enhanced Cleanability
- Excellent material stability – maintains viscosity tack and viscosity over time
- Can be used in nitrogen or air environments
- Excellent print and pin-transfer stability

## APPLICATION

- Pin Transfer or Ball Dip
- Screen/Stencil Print

## PHYSICAL AND CHEMICAL PROPERTIES

| ALPHA WSX 9200 TECHNICAL DATA | | |
|---|---|---|
| **CATEGORY** | **RESULTS** | **PROCEDURES/REMARKS** |
| **CHEMICAL PROPERTIES** | | |
| Activity Level (J-STD Classification) | ORL0 | IPC J-STD-004 |
| Halide Content | Halide free (by titration).<br>Passes Ag Chromate Test | IPC TM-650 Test Method 2.3.35 |
| Copper Corrosion Test (after washing) | Pass, (No evidence of Corrosion) | IPC TM-650 Test Method 2.3.32 |
| pH (5% Solution) | 5 - 7 | IPC-TM-650 pH Meter |
| **ELECTRICAL PROPERTIES** | | |
| SIR (IPC 7 days @ 85°C/85% RH) | Pass, > $10^9$ ohms | IPC-TM-650 method 2.6.3.3<br>{Pass ≥ 1 x $10^8$ ohm min} |
| **PHYSICAL PROPERTIES** | | |
| Appearance | Brown | Visual |
| Tack Strength (Time-16 hrs) | > 130 gF | JIS Z 3284 |
| Viscosity; Malcom Spiral Viscometer (@10 rpm) | 600 - 1000 poise (typical) | ICPH213 |
| Acid Number | 70 - 80 (typical) | ASP-WI-QC-001FS |

## REFLOW

Reflow can be accomplished in an air or nitrogen controlled atmosphere, with nitrogen environments with ≤ 500 ppm oxygen levels providing improved results. The initial ramp rate should be at 0.5 – 1°C per second to a peak temperature of 230 – 245ºC (typical lead-free alloys), or 210 – 225ºC (typical lead bearing alloys). The time over the alloy's liquidus (183ºC for Sn63 or 217 - 227°C for most SAC alloys) should be 45-90 seconds. Cooling rate should be ≥ 3° C per second to room temperature.

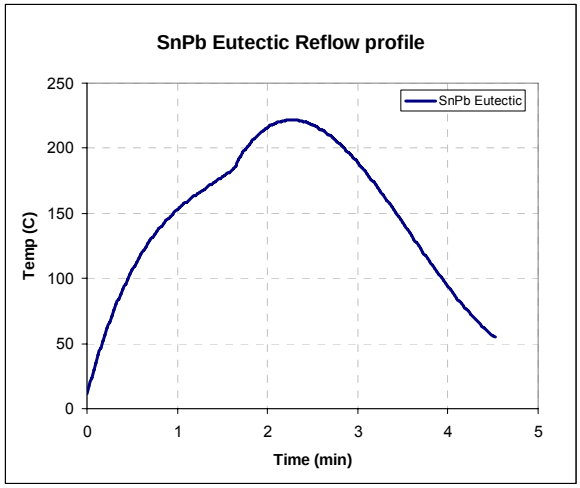
| REFLOW PARAMETERS (Pb free) | VALUE |
|---|---|
| Ramp rate (ºC/sec) | 0.5 - 1 |
| Typical Lead-Free Peak range (ºC) | 230 -245 |
| Time above liquidus (sec) | 30 - 90 |
| Cool down rate (ºC/sec) | > 3.0 |



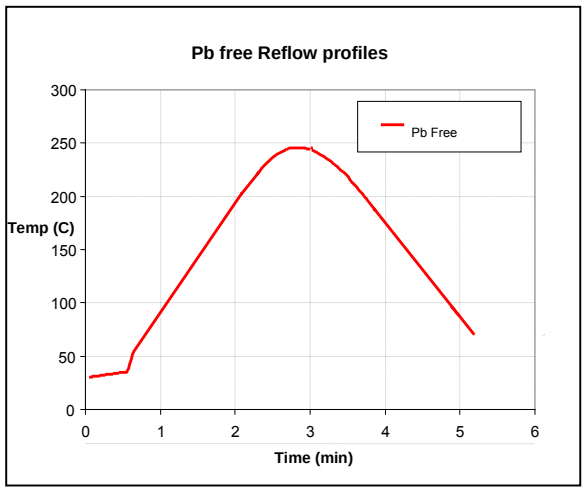
3950 Johns Creek Ct., Suite 300, Suwanee, GA 30024, USA, 1-908-791-2315, www.aam.alent.com
Forsyth Road, Sheerwater, Woking, Surrey, GU21 5RZ, United Kingdom, (44) 1483 758400
14 Joo Koon Crescent, Singapore 629014, (65) 6861.0244

Example reflow profiles:

**SnPb Eutectic reflow profile**




**Pb-free Reflow Profile**




## RESIDUE REMOVAL

Water wash temperature 40 - 50°C without saponifier is suitable to achieve excellent results. Spray pressures of 35 to 60 psi are sufficient to remove all residues. Cleaning results using ALPHA WSX 9200 flux may exceed those achievable using traditional RMA materials.

## STORAGE

This flux should be stored in sealed containers at 15°C - 25°C and should **NOT** be refrigerated. Shelf life of unopened containers is nominally 12 months. If a container has been chilled, the container should be allowed to reach room temperature before opening in order to prevent moisture condensation from ambient air onto the flux.

## SAFETY

While ALPHA WSX 9200 series flux is not considered toxic, its use in typical reflow processes will generate a small amount of decomposition and reaction vapors. These vapors should be adequately exhausted from the work environment and away from personnel. Consult the Material Safety Data Sheet for additional safety information.



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an Alent plc Company

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