



Water Soluble Solder Paste

Features:

- 48 Hour Stencil Life
- Excellent Activity
- Slump Resistant
- 24 Hour Tack Time
- Excellent Printing Characteristics
- Good for Batch or Continuous Runs
- Extended Cleaning Window
- High-Humidity Resistant
- Will Not Foam During Wash

Description:

WS483 is an organically activated formulation developed to better resist the effects of increased humidity levels. WS483 offers improved heat and humidity resistance, while maintaining high tack and resistance to slump. WS483 also provides an exceptional post-process cleaning window and will not foam during the cleaning process, even in high-pressure wash systems.

Printing:

- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle (a bead diameter of 12 to 16 mm ($\frac{1}{2}$ to $\frac{5}{8}$ inch) is normally sufficient to begin).
- Apply small amounts of fresh solder paste to the stencil at controlled intervals to maintain paste chemistry and workable properties.
- WS483 provides the necessary tack time and force for today's high speed placement equipment, which will enhance product performance and reliability.

RECOMMENDED INITIAL PRINTER SETTINGS BELOW ARE DEPENDENT ON PCB AND PAD DESIGN							
PARAMETER	RECOMMENDED INITIAL SETTINGS	PARAMETER	RECOMMENDED INITIAL SETTINGS				
Squeegee Pressure	0.10-0.30 kg/cm (.6 - 1.7 lbs/In.) of blade	PCB Separation Distance	0.75-2.0 mm (.030080")				
Squeegee Speed	12-150 mm/sec (.5-6"/sec)	PCB Separation Speed	Slow				
Snap-off Distance	On Contact 0.00 mm (0.00")						

Reflow Profile:

A straight ramp-spike profile should be used as shown below. The shaded area defines the process window. Oven efficiency, board size/mass, component type and density all influence the final profile for a given This profile is a starting point, and processing boards with thermal-couples attached is assembly. recommended to optimize the process.



Sn63 and Sn62 Reflow Profile Window

RATE OF RISE 1.0-1.3 °C / SEC MAX	TO PEAK TEMP 210 °C-220°C (410°F-430°F)	<i>TIME ABOVE</i> 183 °C (380°F)	$\frac{COOLDOWN}{\leq 4^{\circ}C / SEC}$	PROFILE LENGTH AMBIENT TO COOL DOWN
Standard Profile	45-75 Sec	30-60 Sec	45±15 Sec	2.75-3.5 Min

THE RECOMMENDED REFLOW PROFILE FOR WS483 IS PROVIDED AS A GUIDELINE. OPTIMAL PROFILE MAY DIFFER DUE TO OVEN TYPE, ASSEMBLY LAYOUT, OR OTHER PROCESS VARIABLES. CONTACT AIM TECHNICAL SUPPORT IF YOU REQUIRE ADDITIONAL PROFILING ASSISTANCE.

♦ THE REFLOW PROFILE FOR THE Sn/Pb Pastes using a Vapor Phase Reflow Oven: Peak temperature range is 230°C – 245°C.

Compatible Products:

- Electropure Solder Bar
- WS Tacky Flux
- WS715; WS375 Spray Flux
- WS482 Cored Wire
- Epoxy 4089 Chip Bonding Epoxy

Cleaning:

WS483 can be cleaned easily with normal tap water. Deionized water is recommended for the final rinse. A temperature of $38^{\circ}C (100^{\circ}F) - 66^{\circ}C (150^{\circ}F)$ is sufficient for removing residues. An in-line or other pressurized spray cleaning system is suggested, but is not required.

Handling and Storage:

- WS483 has a refrigerated shelf life of 6 months at 4°C (40°F) 12°C (55°F).
- Allow the solder paste to warm naturally to ambient temperature (8 hrs.) prior to breaking the seal for use.
- Mix the product lightly and thoroughly for 1 to 2 minutes to ensure even distribution of any separated material.
- Do not store new and used paste in the same container, and reseal any opened containers while not in use.
- Replace the internal plug and cap of the 500 gram jars to ensure the best possible seal.

Safety:

- Use with adequate ventilation and proper personal protective equipment.
- Refer to the accompanying Material Safety Data Sheet for any specific emergency information.
- Do not dispose of any lead-containing materials in non-approved containers.

Physical Properties:

ITEM	SPECIFICATION	
Appearance	Gray, Smooth, Creamy	
Alloy	Sn63 and Sn62	
Melting Point	183°C	
Particle Size	T3, T4, T5	
General Metal Loading	90% (T3)	
Viscosity	Print/Dispense	
Packaging	Available in all industry standard packaging.	

Test Data Summary:

CLASSIFICATION						
Product Name	IPC Classification to J-STD-004	Copper Mirror to J-STD-004	Silver Chromate to J-STD-004			
WS483	ORM0	Low	Pass			
POWDER TEST						
<u>No.</u>	Item	Results	Test Method			
1	Powder Size	Type 3 – 45-25 micron Type 4 – 38-20 micron	J-STD-004 IPC TM 650 2.2.14			
2	Powder Shape	Spherical	Microscope			
FLUX MEDIUN	M TESTING					
<u>No.</u>	Item	Results	Test Method			
1	Acid Value	150.02 mg KOH/g Flux	J-STD-004 IPC TM 650 2.3.13			
2	Fluorides Spot Test	No Fluoride	J-STD-004 IPC TM 650 2.3.35.1			
3	Corrosivity Test/ Copper Mirror	Low	J-STD-004 IPC TM 650 2.3.32			
4	Halide-Free/Silver Chromate Paper Test	Pass	J-STD-004 IPC TM 650 2.3.33			
7	Surface Insulation Resistance	Control coupons > $1E9\Omega$ at 96 & 168 h Pass Sample coupons > $1E8\Omega$ at 96 & 168 h Pass Post-test visual inspection > No dendrite growth or corrosion - Pass	J-STD-004 IPC TM 650 2.6.3.3			
8	Compatibility Test	See list of recommended products above	GR-78-CORE			
VISCOSITY TESTING						
<u>No.</u>	Item	Results	Test Method			
1	T-Bar Spindle Test Method	$900 \pm 10\%$ kcps	J-STD-005 IPC TM 650 2.4.34			
SOLDER PASTE TESTING						
<u>No.</u>	Item	Results	Test Method			
1	Tack Test	30.5 gf	J-STD-005 IPC TM 650 2.4.44			
2	Tack Test	82.8 gf	JIS Z 3284 Annex 9			
3	Solder Ball Test	Pass	J-STD-005 IPC TM 650 2.4.43			
4	Wetting Test	Pass	J-STD-005 IPC TM 650 2.4.45			
5	Paste Shelf Life	$4^{\circ}C (40^{\circ}F) - 12^{\circ}C (55^{\circ}F) = 6 \text{ months}$	AIM TM 125-11			
6	Solder Paste Slump Test	Pass	J-STD-005 IPC TM 650 2.4.35			

Canada +1-514-494-2000 · USA +1-401-463-5605 · Mexico +52-656-630-0032 · Europe +44-1737-222-258 Asia-Pacific +86-755-2993-6487 · India +91-80-41554753 · info@aimsolder.com · www.aimsolder.com *AIM IS ISO9001:2008 & ISO14001:2004 CERTIFIED*

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