QFN350 TDS

Product Description

QFN350 is a zero-halogen, lead-free, water-soluble solder paste formula for both nitrogen and air reflow applications. QFN350 provides a combination of consistent print performance at wide humidity levels, excellent solderability and ease of cleaning, while maintaining a zero-halogen flux formulation. QFN350 is a stable water-soluble formula, providing consistent stencil life, tack time and print definition. QFN350 is classified as ORM0 flux under IPC J-STD-004B.

Physical Properties (SAC 305)

Viscosity (typical): 1700 poise

Malcom Viscometer @ 10 rpm, 25°C

Slump Test: Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.35

Solder Ball Test: Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.43

Wetting: Pass

Tested to J-STD-005, IPC-TM-650, Method 2.4.45

Performance Characteristics:

■ Superior reflow characteristics
■ Classified as ORM0 per J-STD-004B
■ Excellent activity and printability
■ Zero-Halogen (none intentionally added)
■ Wide reflow profile window with good solderability
■ Reflowable in air and nitrogen conditions
■ Cleaning can be accomplished with heated deionized water

Reliability Properties

Copper Mirror: Low

Tested to J-STD-004, IPC-TM-650, Method 2.3.32

Copper Corrosion: Low

Tested to J-STD-004, IPC-TM-650, Method 2.3.32

Halogen Content: None Detected

Tested to J-STD-004B, IPC-TM-650, Method 2.3.41

Surface Insulation Resistivity (SIR): Pass

Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7; Test Conditions: 40°C, 90% RH, 7 days, 12.5V

Electro Chemical Migration (ECM): Pass

Tested to J-STD-004B, IPC-TM-650, Method 2.6.14.1

Availability

Standard alloy availability for QFN350 is Sn96.5Ag3.0Cu0.5 with Type 3 (T3), Type 4 (T4) and Type 5 (T5) powder size distribution. T4 mesh size is recommended for standard and fine pitch applications. T5 is recommended for ultra-fine pitch applications. QFN350 is also compatible with other Sn Ag Cu and Sn Ag alloys in similar melting range to the listed alloy. For specific packaging information, refer to Tensan's Solder Paste Packaging Chart for available sizes. The appropriate alloy and powder size combination depends on the process variables and the specific application. If you are looking for alloy or powder sizes currently not listed on Tensan's Solder Paste Packaging Chart, please contact your Tensan Sales or Technical Representative.

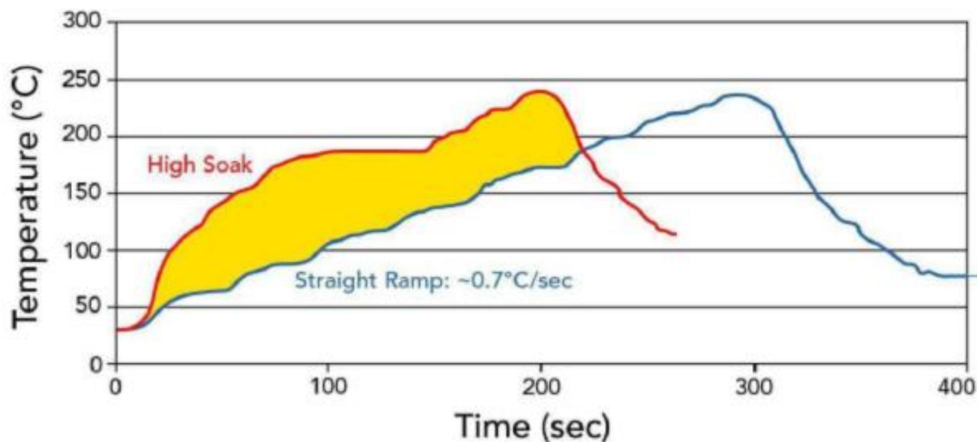
Printing Parameters

Below are process guidelines, and it is advisable to note that the optimum setting for a given assembly may vary and this is dependent on the circuit board design, board thickness, components used, and equipment used. A design of experiments is recommended to be done to optimize the soldering process. In addition, incoming solderability inspection of circuit boards and components is recommended as part of process control to maintain consistent soldering performance and electrical reliability.

Printing Process Parameters	**Recommendations**
Print Temperature Window	20-30°C (68-86°F) / 30-65%RH
Squeegee Angle	60 deg. from horizontal
Speed	25-200 mm/sec (1-8 in/sec)
Pressure	0.18-0.27 kg/cm (1-1.5 lb/in)
Separation Speed	5-20 mm/sec
Stencil Life	8 hours at 21-24°C (70-75°F) / 40-45% RH 1

Recommended Reflow Profile

The recommended reflow profile for formula made with SAC and SnAg alloys is shown here. This profile is simply a guideline. QFN350 has excellent solderability and wetting across a wide range of profiles, with similar performance in air and nitrogen. Your optimal profile may be different from the one shown based on your oven, board and mix of defects. Contact Tensan Technical Support if you need additional profiling advice.



Cleaning

QFN350 is a water-soluble formula. Its residues are best removed using automated cleaning equipment (in-line or batch). Deionized water heated to 60-75°C (140-165°F) should be used followed by a final rinse with deionized water. It is recommended to clean the circuit board after each reflow cycle. Commercial cleaning agent can be used. Contact your supplier for recommendations.

Storage, Handling and Shelf Life

QFN350 T3 and T4 have a six-month shelf life when refrigeration. QFN350 T5 has a refrigerated shelf life of four months with a continuing shelf life study to validate to six months. Refrigeration (0-10°C/32-50°F) is the recommended storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. QFN350 should be stabilized at room temperature prior to printing. Please contact Tensan Technical Support if you require additional ad- vice with regards to handling and storage of this material