

Qualitek 381F NO CLEAN FLUX

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Physical Properties

Qualitek has developed a unique low solids flux system designed specifically for use with high temperature lead free *and* conventional Sn/Pb alloys. It provides the fluxing activity levels that promote fast wetting action and maximum wetting spread. 381F flux eliminates skips and shorts often experienced in wave solder assembly.

Main Features

- Excellent wettability
- Non-conductive, non-tacky residues
- Compatible with Lead free & Leaded Solder Systems

Flux Classification		Specification	Test Method
		ROL0	JSTD-004
Copper Mirror		No removal of copper film	IPC-TM-650 2.3.32
Silver Chromate		Pass	IPC-TM-650 2.3.33
Corrosion		Pass	IPC-TM-650 2.6.15
SIR			
JSTD-004,	Pattern up	2.36 x 10 ¹³ ohms	IPC-TM-650 2.6.3.3
	Pattern down	2.13 x 10 ¹⁴ ohms	
Bellcore (Telecordia)		5.24 x 10 ¹² ohms	Bellcore GR-78-CORE 13.1.3
Electromigration		Pass	Bellcore GR-78-CORE 13.1.4
Acid Value		20.0+/-1.0	IPC-TM-650 2.3.13
Specific Gravity		0.800+/-0.005	
Solids Content		4.4-5.3	IPC-TM-650 2.3-34

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Applications

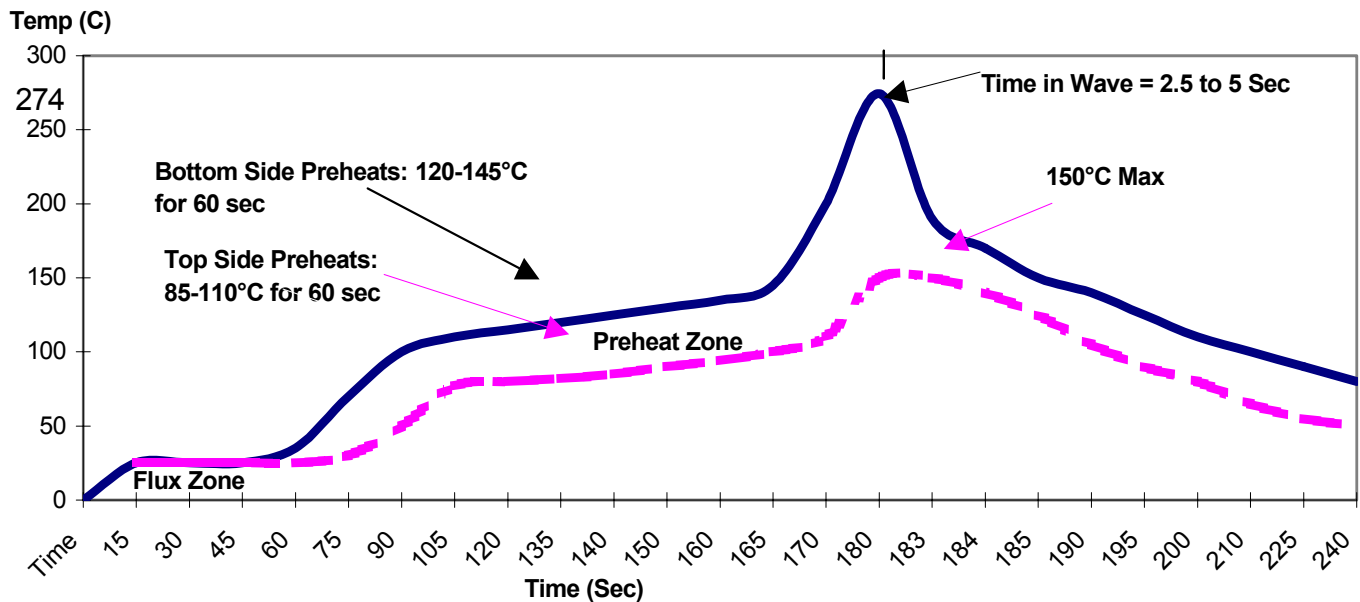
Flux Application

For mass wave soldering of OSP and plated circuit boards, spray, foam or wave fluxing can be utilized to apply this flux. Flux deposition density and uniformity are critical to successful use of low solids no-clean flux. If foam fluxing, the foam fluxer should be supplied with compressed air, which is free of oil and water. The flux tank should be full at all times. The surface of the flux should be 1-½ inches above the top of the flux aerator, or flux stone. Pressure should then be adjusted to produce the optimum foam height with a fine uniform foam head. After fluxing, an air knife should be used to remove excessive flux from the assembly.

Uniformity of the spray flux coating can be visually checked by running a tempered glass plate (usually supplied by machine manufacturer) through the spray and preheat sections, and inspected before going across the wave.

OPERATING PARAMETERS		TYPICAL LEVEL
Amount of flux		Foam, Wave: 1000-2000 ug/in ² solids Spray: 750-1500 ug/in ² solids
Foam Fluxing Parameters		
	Foam Stone Pore Size	20-50 um
	Flux Level Above Stone	1-1 ½ inches (25-40mm)
	Chimney Opening	3/8-1/2 inch (10-13 mm)
	Air Pressure	1-2 psi
Top Side Preheat Temperature		190-230 °F (85-110 °C)
Bottom Side Preheat Temperature		65 °F (35 °C) higher than topside
Conveyor Speed		4-6 feet/minute(1.2-1.8 meters/minute)
Contact Time in the Solder (including Chip & Lambda)		2.5-4.5 seconds
Solder Pot Temperature		
	Sn96.5/Ag3.5	500-530 °F (260-276 °C)
	Sn95/Ag5	536-565 °F (280-296 °C)
	Sn99.3/0.7Cu	510-530 °F (265-276 °C)
	SnAgCu	520-530 °F (271-276 °C)
	Sn95/Sb5	536-565 °F (280-296 °C)

TYPICAL Lead Free Wave Solder Profile (SNAGCU)



Process Control

Control of flux during use is necessary to assure consistent flux deposition on the circuit board. Due to the very low solids content of no clean fluxes, specific gravity is not an accurate measure for assessing solids content. Monitoring and controlling acid number by titration is recommended for maintaining the proper flux concentration. Titration can be done with Qualitek HDT-200 Digital Titration kit. Control of the flux can be achieved with 300A thinner to maintain fluxing activity.

Over time debris and contaminants may accumulate in the flux reservoir. Therefore, periodically replacing the flux and cleaning the reservoir is recommended for consistent performance and minimizing debris build-up.

NOTE: When directly handling solder flux it is recommend to use appropriate gloves.

#381F Flux		
Flux Factor =14.1		
Digits*	Acid Number mgKOH/g	Thinner Required Fl oz/ga
242-299	17-21	0
314	22	7
328	23	13
342	24	19
357	25	24
371	26	29

* Utilizing Qualitek HDT-200 Titration Kit

Cleaning

381F is a no clean formulation therefore the residues do not need to be removed for typical applications. If residue removal is desired, the use of Everklean 1005 Buffered Saponifier with a 5-15% concentration in hot 60°C (140°F) will aid in residue removal.

Storage & Shelf Life

Liquid flux should be stored in a 65-80°F environment away from direct heat and flame. The flux shelf life in these recommended storage conditions is 2 years.

Disposal

381F contains hazardous ingredients therefore the flux should be disposed of in accordance with state & local authority requirements.

Packaging

381F No Clean Flux is available in

- 1 Gallon/1 Liter containers
- 5 Gallon/5 Liter containers
- 55 Gallon/20 Liter containers