



Qualitek 381F NO CLEAN FLUX

CORPORATE HEADQUARTERS USA: 315 Fairbank St. Addison, IL • 630-628-8083 or 1-800-365-3750 • FAX 630-628-6543

EUROPE UK: Unit 9 Apex Ct. Bassendale Rd. Bromborough, Wirral CH62 3RE • 44 151 334 0888 • FAX 44 151 346 1408

ASIA-PACIFIC HEADQUARTERS SINGAPORE: 6 Tuas South St. 5 Singapore 637790 • 65 6795 7757 • FAX 65 6795 7767

PHILIPPINES: Phase 1 Qualitek Ave. Mariveles, Bataan Philippines C-2106 • 6347 935 4163 • FAX 63475613717

CHINA: 3B/F, YiPa Print Bldg. 351 # JiHua Rd., Buji Shenzhen, China 518112 • 86 755 28522814 • FAX 86 755 28522787

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Physical Properties

Qualitek has developed a unique flux system designed specifically for conventional solder & high temperature lead free 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
	ROLO	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
	Pattern down	2.13 x 10 ¹⁴ ohms
Bellcore (Telecordia)		5.24 x 10 ¹² ohms
Electromigration	Pass	Bellcore GR-78-CORE 13.1.3
Acid Value	20.0+/-1.0	Bellcore GR-78-CORE 13.1.4
Specific Gravity	0.800+/-0.005	IPC-TM-650 2.3.13
Solids Content	4.4-5.3	IPC-TM-650 2.3-34

Applications

Flux Application

For mass wave soldering of bare copper and plated circuit boards, spraying, 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 foam 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.

If spray fluxing, the uniformity of the coating can be visually checked by running a tempered glass plate (usually supplied by machine mfr.) through the spray and preheat sections.

OPERATING PARAMETERS	TYPICAL LEVEL
Amount of flux	Foam, Wave: 1000-2000 ug/in ² of solids Spray: 750-1500 ug/in ² of 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	
Sn63/Pb37	490-500 °F (254-260 °C)
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)

Process Control

Control of flux during use is necessary to assure a consistent amount of flux is applied to assemblies. 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 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, the debris and contaminants will accumulate in the flux reservoir. Therefore, it is recommended that periodic replacement of the flux is required for consistent soldering performance and to prevent debris build up on circuit assembly.

#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 Everkleen 1005 Buffered Saponifier with a 5-15% concentration in hot 60 C (140 F) will aid in residue removal.

Storage & Shelf Life

Liquid Fluxes storage should be in a 65-80°F environment away from direct heat and flame. When directly handling solder flux it is recommend to use appropriate gloves. Solder flux shelf life

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