Qualitek Group Of Companies

QUALITEK
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Qualitek 399-42
NO CLEAN LEAD Free
FLUX

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Physical Properties

Qualitek 399-42 is a homogeneous mixture of halogen-free, low solids organic flux designed for wave-soldering conventional and surface mount PCB assemblies. 399-42 exhibits excellent wetting and fluxing activities. 399-42 eliminates the expense of cleaning with no surface insulation resistance degradation, and bright, lustrous solder joints.

Main Features

- Excellent wettability
- Non-conductive non -tacky residues
- Halide free

		Specification	Test Method
Flux Classification		ORL0	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	1.13×10^{13} ohms	IPC-TM-650 2.6.3.3
	Pattern down	2.2×10^{14} ohms	
Bellcore (Telecordia)		3.5×10^{12} ohms	Bellcore GR-78-CORE 13.1.3
Electromigration		Pass	Bellcore GR-78-CORE 13.1.4
Acid Value		37.0+/-1.0	IPC-TM-650 2.3.13
Specific Gravity		0.830+/-0.005	
Solids Content		4.0-5.00	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: 650-1200 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 ^{o}F (85-110 ^{o}C)
Bottom Side Preheat Temperature	65 ^{o}F (35 ^{o}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 ^{o}F (254-260 ^{o}C)
Sn96.5/Ag3.5	500-530 ^{o}F (260-276 ^{o}C)
Sn95/Ag5	536-565 ^{o}F (280-296 ^{o}C)
Sn99.3/0.7Cu	510-530 ^{o}F (265-276 ^{o}C)
SnAgCu	520-530 ^{o}F (271-276 ^{o}C)
Sn95/Sb5	536-565 ^{o}F (280-296 ^{o}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.

CLEANING

399-42 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^{o}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

399-42 contains hazardous ingredients therefore the flux should be disposed of in accordance with state & local authority requirements.

Packaging

399-42 No Clean Flux is available in

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