产品：

在您担心的工人安全，环境保护和焊接性能，电可靠性之间找到平衡。

Balance your concern for worker safety and environmental care with soldering performance and electrical reliability

ALPHA® EF-2210

产品指南

Air. Earth. Fire. Water.

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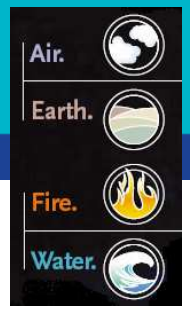
EF-2210



内容

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EF-2210

简介

ALPHA EF-2210 是一款新设计的不含VOC，不含松香，免清洗助焊剂。应用了最新的创新技术提供同比最佳的焊接性能及可靠性。EF-2210 无论是使用无铅或锡铅合金，不同的机器参数设置或者传统的或超声波喷雾器，EF-2210均可得到满意的效果。用户在享受卓越性能的同时，还可受益于EF2210对环境的友好及使用安全。

特性	优点
不含VOC	不燃。不产生损耗臭氧的VOC排放。
不含松香	残留不粘，无色透明。针测100%首测通过率。减少夹具和设备的清洁和保养时间。
卓越的焊接性能	同比最佳的孔填充、桥连、拉尖、微锡珠和漏焊性能（使用2次回流OSP 板和金属表面焊盘）。
优秀的电可靠性	符合IPC和Bellcore EM，SIR要求。IPC分类 ORL0.
多合金兼容能力	宽温度工艺窗口，使得无铅和锡铅工艺高良率。

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VOC-Free 配方
对人体健康和环境安全

- 不易燃，不可燃
- 无需控制VOC排放
- 无毒
- 无味
- 不含有“致敏”物质

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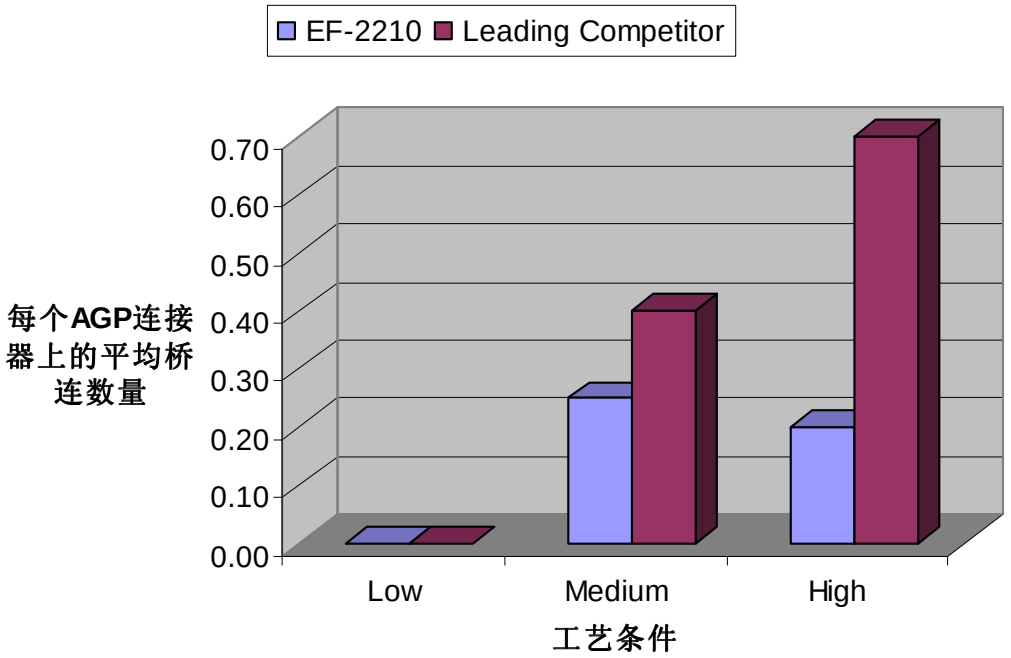
下一代不含**VOC**配方
可用于无铅焊接– **SACX – 低银合金**
同比最优的表面性能

同比最优的桥连性能.
在所有工艺/温度条件下均稳定超越竞争对手性能。



工艺条件	SACX 低	SACX 中	SACX 高
传送带速度(英尺/分钟):	6	4.5	3
板子类型 / 最终处理:	FR4 / Entek HT	FR4 / Entek Plus	FR4 / Entek HT
温度曲线:	胶水固化	胶水固化+ 1 无铅回流	胶水固化+ 1 无铅回流
焊槽温度:	255℃	260℃	265℃
顶面预热:	105℃	110℃	120℃
助焊剂量 (µg/in2):	1600	1800	1900

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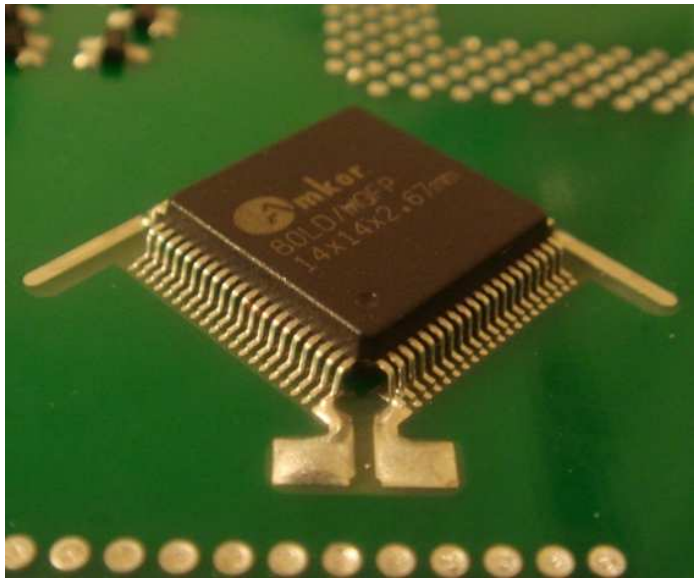
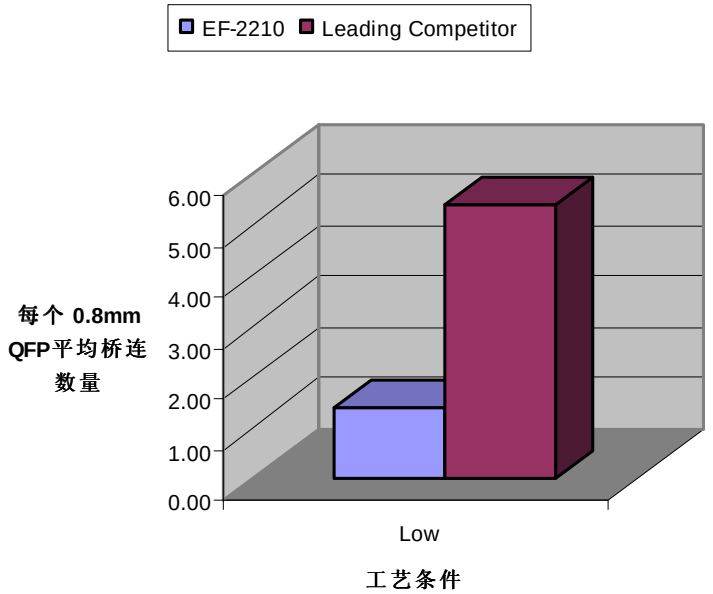
下一代不含**VOC**配方

可用于无铅焊接– **SACX** – 低银合金

同比最优的表面性能





卓越的QFP器件抗桥连性能

工艺条件	SACX 低
传送带速度(英尺/分钟):	6
板子类型 / 最终处理:	FR4 / Entek HT
温度曲线:	胶水固化
焊槽温度:	255℃
顶面预热:	105℃
助焊剂量 (µg/in2):	1600

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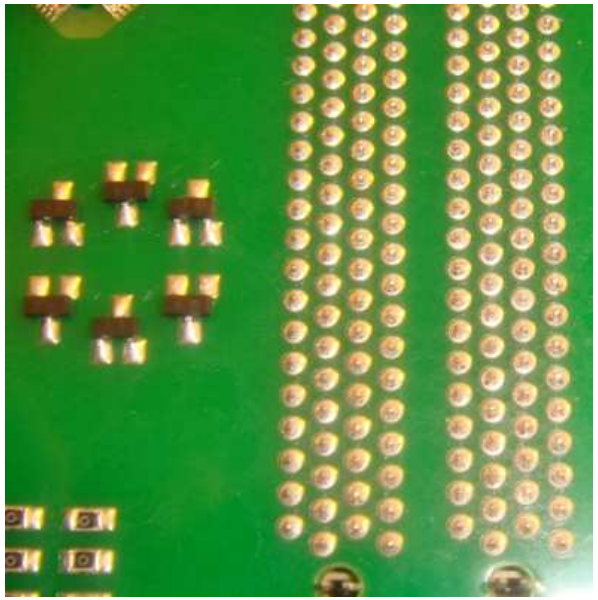
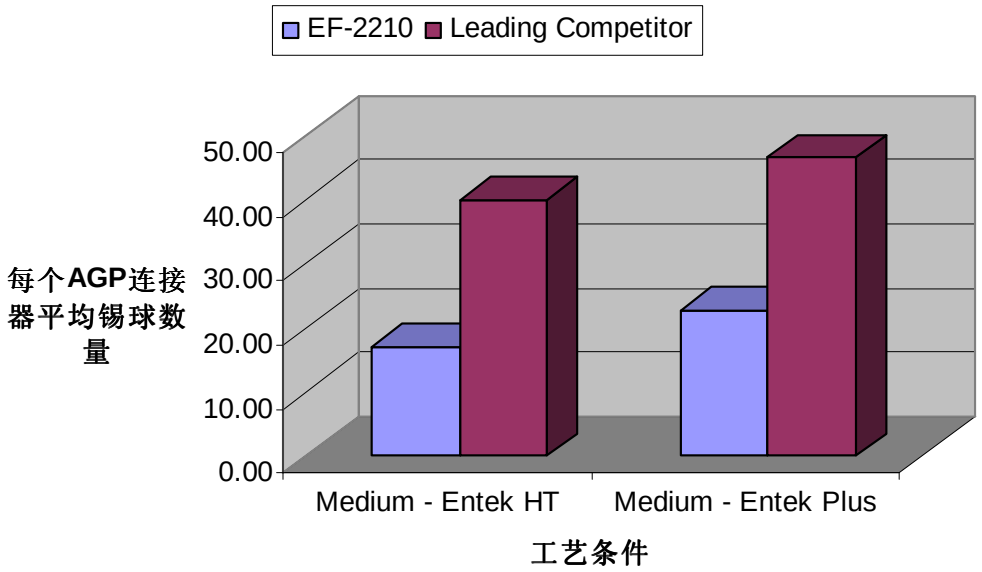
下一代不含VOC配方
可用于无铅焊接– SAC305
同比最优的表面性能

最小化
微锡珠





工艺条件	SAC305 中	SAC305 中
传送带速度(英尺/分钟):	4.6	4.6
板子类型 / 最终处理:	FR4 / Entek HT	FR4 / Entek Plus
温度曲线:	胶水固化 + 1 无铅回流	胶水固化 + 1 无铅回流
焊槽温度:	265℃	265℃
顶面预热:	112℃	112℃
助焊剂量 (µg/in2):	1500	1500

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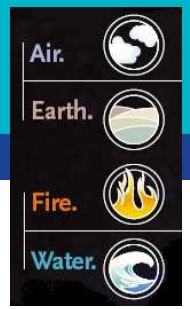
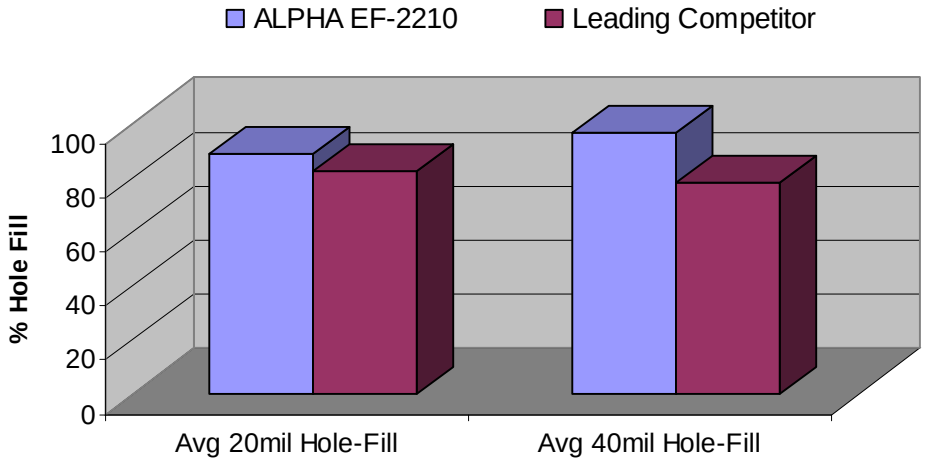
EF-2210



下一代不含VOC配方
可用于无铅焊接– SACX
同比最优的孔填充性能

ALPHA EF-2210
表现出
卓越的孔填充性能
对大部分常用孔尺寸，使用SACX合金。



合金	SACX0307
波 (单/双)	双
线路板类型	FR4
焊盘表面最终处理	Entek HT
温度曲线	胶水固化
传送带速度	6.0'/min
焊槽温度	255℃
顶面预热温度	105℃
助焊剂量 (ug/in2)	1600

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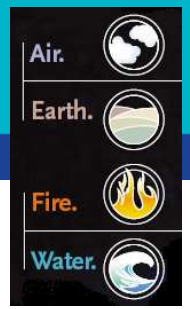
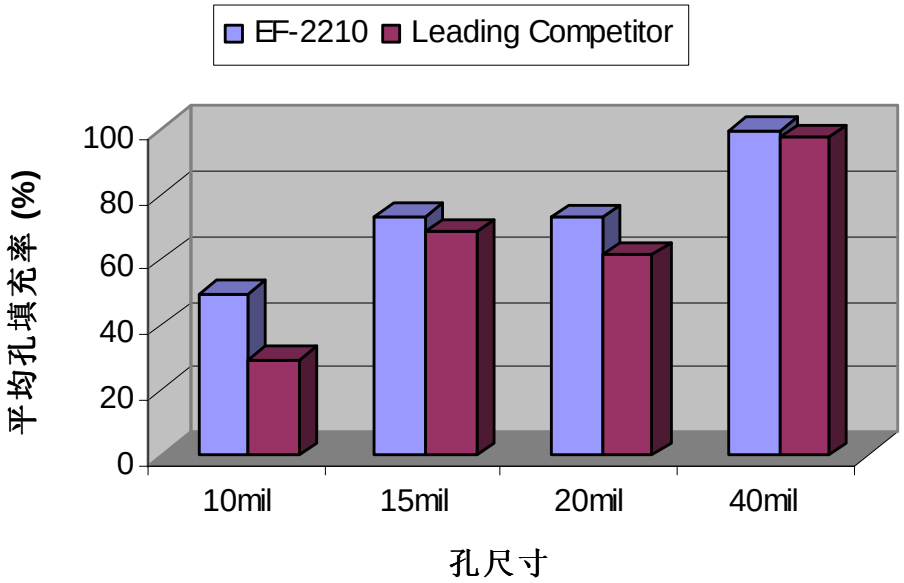


下一代不含**VOC**配方
可用于无铅焊接– **SAC305** 合金
同比最优的孔填充性能



合金	SAC305
波 (单/双)	双
线路板类型	FR4
焊盘表面最终处理	Entek HT
温度曲线	GC + 1 次无铅回流
传送带速度	4.59英尺/分
焊槽温度	265℃
顶面预热温度	112℃
助焊剂量 (ug/in2)	1500

对于 SAC305 ALPHA EF-2210 同样表现出
卓越的孔填充性能

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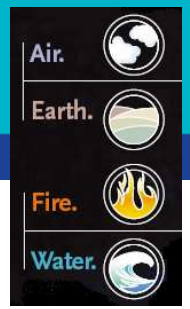
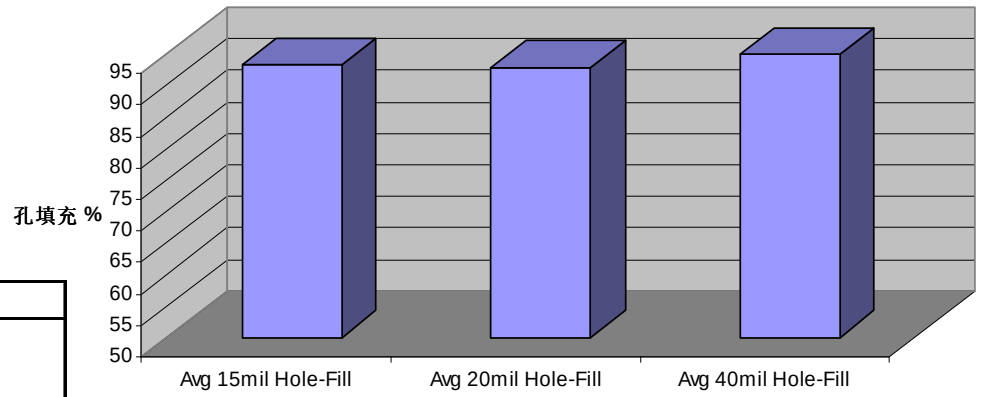


下一代不含**VOC**配方
可用于有铅焊接– **SnPb/**锡铅
同比最优的表面性能

锡铅 (SnPb) 能力

ALPHA EF-2210 孔填充结果
SnPb



工艺条件	SnPb 中
传送带速度(ft./min):	4.5
板子类型 / 最终处理:	FR4 / Entek OSP
温度曲线:	胶水固化 + 1 SnPb 回流
焊槽温度:	245℃
顶面预热:	105℃
助焊剂量 (µg/in2):	1300

缺陷	合金 Sn63Pb37	
	EF-2210	主要竞争者
平均桥连数/连接器	**0.00**	**0.30**
平均桥连数/0.8mm QFP	**0.00**	**0.00**
平均锡珠数/ PCI 连接器	**59.05**	**65.15**

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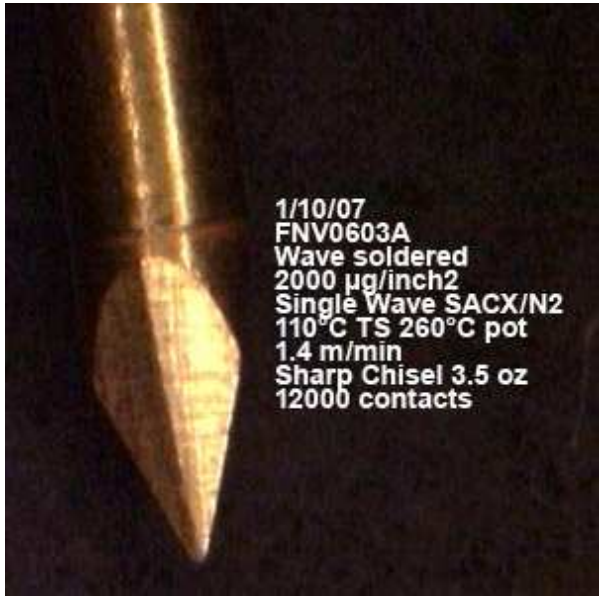
下一代不含**VOC**配方

针测数据

After 4,000 probes



After 12,000 probes

- 锡铅和无铅应用中12000次测试， 100% 首测通过率。
- 无需担心在线针测

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注: FNV0603A 是 ALPHA EF-2210实验室名称

EF-2210

下一代不含**VOC**配方
市场上最可靠的，不含**VOC**，不含松香的助焊剂

可靠性测试	EF-2210	主要竞争者
铬**酸**银试纸测试 IPC-TM 650 测试**方法** 2.3.33	通过	通过
铜镜测试 IPC-TM 650测试**方法** 2.3.32	通过	低穿透
铜**腐**蚀测试 IPC-TM 650测试**方法** 2.6.15	通过	低腐蚀
Bellcore GR-78-CORE SIR 测试	通过 Comb Down 2.1 x 10^{11} Comb Up 2.3 x 10^{11}	未通过 *基于独立的第三方测试*
IPC SIR 测试 / Bellcore EM •J-STD-004A 和 J-STD-001D	通过	通过

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下一代不含VOC配方
产品数据

物理特性	典型值	参数/测试方法	典型值
外观	无色透明液体	pH	2.2
固态含量, wt/wt	4.0	推荐稀释剂	去离子水
比重@ 25℃ (77℃)	1.015 ± 0.003	储存寿命	18 月
酸值 (mg KOH/g)	31.5 ± 2.0	VOC 含量	<1%
闪点 (T.C.C.)	无	IPC J-STD-004 标示	ORL0

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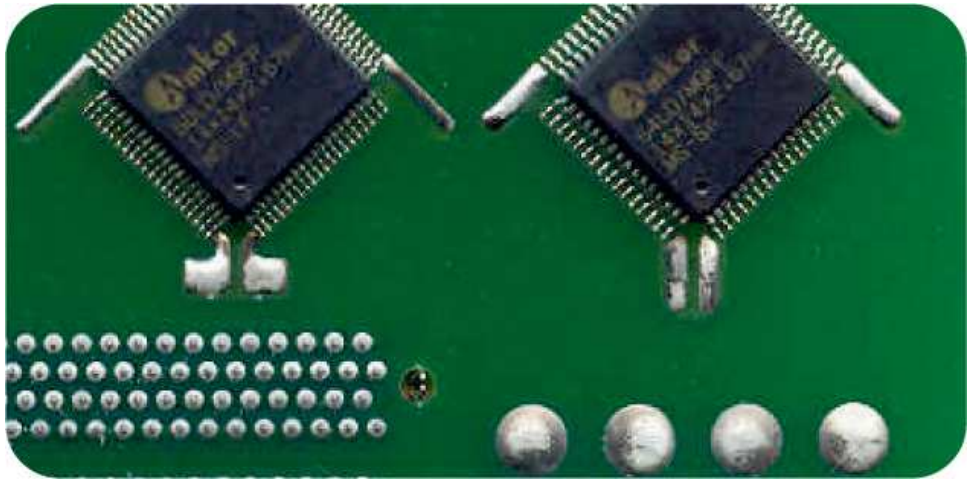
下一代不含**VOC**配方
助焊剂残留和焊点外观

助焊剂残留外观:
无色，透明，没有粘性，均匀分布在板子表面



焊点残留外观:
锡铅和无铅合金均可得到平滑的焊点表面

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下一代不含VOC配方
应用指南

操作参数	典型值
助焊剂应用量	喷射:固态物质<2000 µg/in²
顶面预热温度	95 - 115°C (220 - 240°F)
底面预热温度	比顶部温度高0 - +22°C (0 to +40°F)
推荐预热温度曲线	直线升温至需要的顶面温度
顶面温度最大升温斜率（防止元器件损坏）	最大2°C/秒 (3.5°F/秒)
传送带角度	5 - 8° (6° 最普遍)
传送带速度	2.0 - 6.5 英尺/分钟
接触焊料时间（包括片波和主波）	2 - 7 秒 (3 - 5 秒最普遍)
焊料槽温度:	
Sn63/Pb37 合金	235 - 260°C (460 - 500°F)
无铅合金 (99.3Sn/0.7Cu, 96.5/3.5Ag, SAC305 & SAC405)	255 - 270°C (500 - 520°F)
这是经过验证可以得到良好焊接结果的一般性指南。但用户的最佳设定可能会随着设备，组件，电路板等的不同会有所不同。为了优化工艺，建议进行试验设计来确定关键参数的最佳值。（助焊剂喷量，传送带速度，顶面预热温度，锡锅温度和送板方向等）。	

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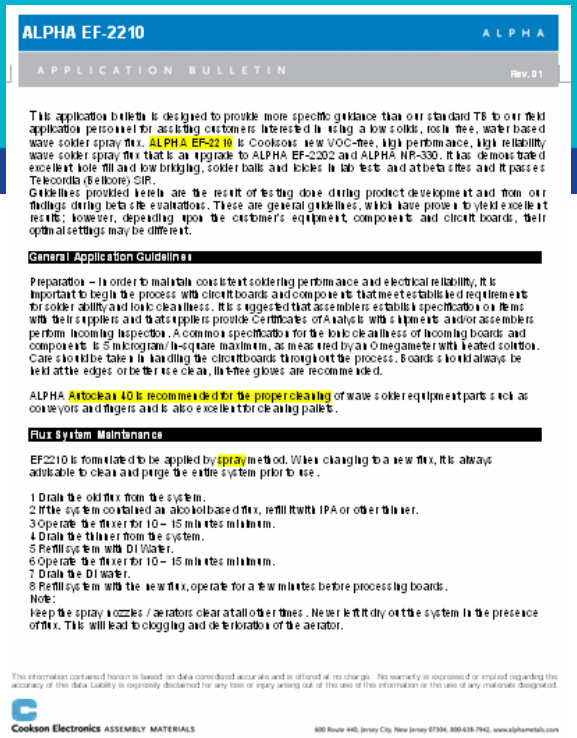
应用资料/Application Bulletin



ALPHA EF-2210 ALPHA

APPLICATION BULLETIN Rev. 01

This application bulletin is designed to provide more specific guidance than our standard TB to our field application personnel for assisting customers interested in using a low solids, rosin free, water based wave solder spray flux. ALPHA EF-2210 is Cookson's new VOC-free, high performance, high reliability wave solder spray flux that is an upgrade to ALPHA EF-2202 and ALPHA NR-330. It has demonstrated excellent hole fill and low bridging, solder balls and icicles in lab tests and at beta sites and it passes Telecordia (Bellcore) SIR.

Guidelines provided herein are the result of testing done during product development and from our findings during beta site evaluations. These are general guidelines, which have proven to yield excellent results; however, depending upon the customer's equipment, components and circuit boards, their optimal settings may be different.

General Application Guidelines

Preparation – In order to maintain consistent soldering performance and electrical reliability, it is important to begin the process with circuit boards and components that meet established requirements for solderability and ionic cleanliness. It is suggested that assemblers establish specification criteria with their suppliers and that suppliers provide Certificates of Analysis with shipments and/or assemblers perform incoming inspection. A common specification for the ionic cleanliness of incoming boards and components is 5 microgram/in²-square maximum, as measured by an Omegameter with heated solution. Care should be taken in handling the circuitboards throughout the process. Boards should always be held at the edges or better use clean, lint-free gloves are recommended.

ALPHA Aztoclean 40 is recommended for the proper cleaning of wave solder equipment parts such as conveyors and fingers and is also excellent for cleaning pallets.

Flux System Maintenance

EF2210 is formulated to be applied by spray method. When changing to a new flux, it is always advisable to clean and purge the entire system prior to use.

1 Drain the old flux from the system.
2 If the system contained an alcohol based flux, refill it with IPA or other thinner.
3 Operate the fluxer for 10 – 15 minutes minimum.
4 Drain the thinner from the system.
5 Refill system with DI Water.
6 Operate the fluxer for 10 – 15 minutes minimum.
7 Drain the DI water.
8 Refill system with the new flux, operate for a few minutes before processing boards.
Note:
Keep the spray nozzles / aerators clear at all other times. Never let it dry out the system in the presence of flux. This will lead to clogging and deterioration of the aerator.

This information contained herein is based on data considered accurate and is offered at no charge. No warranty is expressed or implied regarding the accuracy of this data. Liability is expressly disclaimed for any loss or injury arising out of this use of this information or this use of any materials designated.

Cookson Electronics ASSEMBLY MATERIALS 600 Route 440, Jersey City, New Jersey 07304, 800-638-7942, www.alphametals.com

- 发行时分发Distributed with launch
- 作为销售/应用人员现场试验时指导用 Guidance for Sls / Apps personnel when performing trial on site

操作温度	典型值
助焊剂量	喷射：1000-1300 µg/in² 固态含量
顶面预热温度	95-105°C for 15-25 秒
底面预热温度	110-120°C for 15-25 秒
总预热时间	60-80 秒
焊料接触时间 (包括片波和主波)	4-8 秒，取决于焊盘表面最终处理和板子厚度 (见应用资料AB)
锡槽温度: 无铅合金	255-260°C

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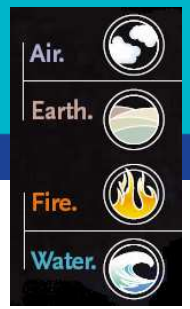
EF-2210



下一代不含VOC配方
性能摘要

兼容大多数线路板材料Compatibility with most popular PC fabrication materials:

- 所有主要的焊盘表面最终处理，包括 - Entek® Plus 和 Entek® HT OSP, 浸银/Immersion Silver, HASL 和 松香涂覆表面最终处理
- FR4 和 FR2 板材类型
- Taiyo PSR4000 和 Enthone LPI 阻焊膜

电可靠性

- 符合Telecordia (Bellcore) SIR 和 IPC SIR
- 达到 Telecordia (Bellcore) 和 IPC Electromigration (EM) 要求
- 按照 IPC J-STD-004分级：ORL0

工艺应用

- 锡铅或无铅合金
- 喷射助焊剂
- 与含松香助焊剂相比，设备维护需求最少
- 与夹具/选择波峰焊高度兼容Highly Compatible with Pallets/Selective Soldering
- 与酒精基（由于酒精挥发而损失）相比，更稳定的涂覆量Consistent deposition volumes vs. alcohol (loss from alcohol volatilization)

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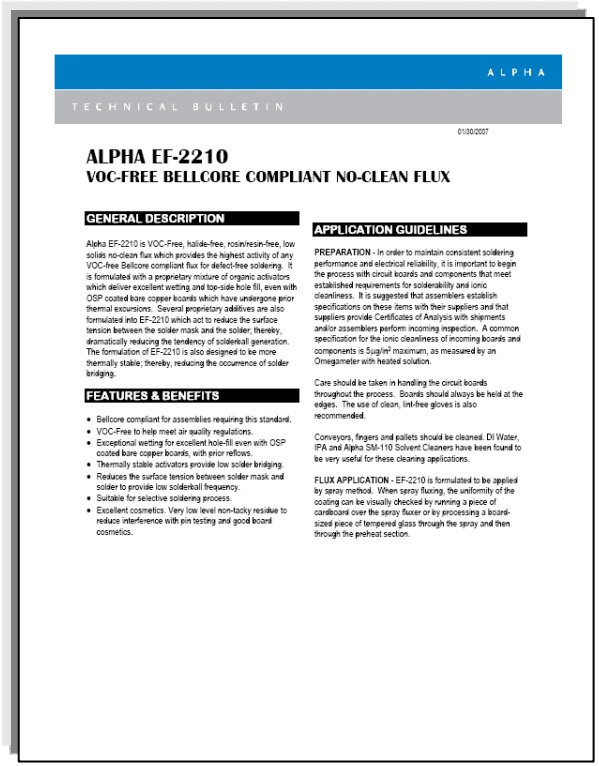
下一代不含**VOC**配方
技术资料和材料安全数据表

点击下面链接观看文件



ALPHA

TECHNICAL BULLETIN

01/30/2007

ALPHA EF-2210
VOC-FREE BELLCORE COMPLIANT NO-CLEAN FLUX

GENERAL DESCRIPTION

Alpha EF-2210 is VOC-Free, halide-free, rosin/resin-free, low solids no-clean flux which provides the highest activity of any VOC-free Bellcore compliant flux for defect-free soldering. It is formulated with a proprietary mixture of organic activators which deliver excellent wetting and top-side hole fill, even with OSP coated bare copper boards which have undergone prior thermal excursions. Several proprietary additives are also formulated into EF-2210 which act to reduce the surface tension between the solder mask and the solder, thereby, dramatically reducing the tendency of solderball generation. The formulation of EF-2210 is also designed to be more thermally stable; thereby, reducing the occurrence of solder bridging.

FEATURES & BENEFITS

- Bellcore compliant for assemblies requiring this standard.
- VOC-Free to help meet air quality regulations.
- Exceptional wetting for excellent hole-fill even with OSP coated bare copper boards, with prior reflows.
- Thermally stable activators provide low solder bridging.
- Reduces the surface tension between solder mask and solder to provide low solderball frequency.
- Suitable for selective soldering process.
- Excellent cosmetics. Very low level non-tacky residue to reduce interference with pin testing and good board cosmetics.

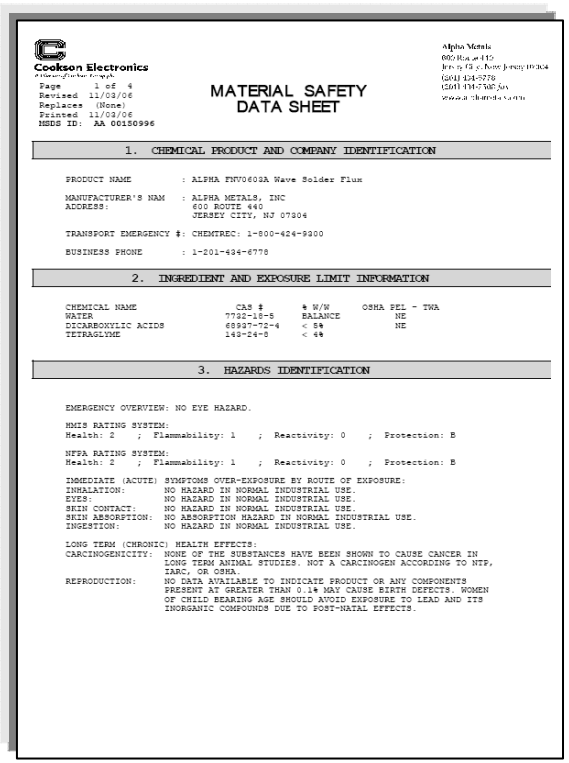
APPLICATION GUIDELINES

PREPARATION - In order to maintain consistent soldering performance and electrical reliability, it is important to begin the process with circuit boards and components that meet established requirements for solderability and ionic cleanliness. It is suggested that assemblers establish specifications on these items with their suppliers and that suppliers provide Certificates of Analysis with shipments and/or assemblers perform incoming inspection. A common specification for the ionic cleanliness of incoming boards and components is 5$\mu g/in^2$ maximum, as measured by an Omegameter with heated solution.

Care should be taken in handling the circuit boards throughout the process. Boards should always be held at the edges. The use of clean, lint-free gloves is also recommended.

Conveyors, fingers and pallets should be cleaned. DI Water, IPA and Alpha SM-110 Solvent Cleaners have been found to be very useful for these cleaning applications.

FLUX APPLICATION - EF-2210 is formulated to be applied by spray method. When spray fluxing, the uniformity of the coating can be visually checked by running a piece of cardboard over the spray fluxer or by processing a board-sized piece of tempered glass through the spray and then through the preheat section.



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Page 1 of 4
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MSDS ID: AA 00150996

MATERIAL SAFETY DATA SHEET

Alpha Metals
600 Route 440
Jersey City, New Jersey 07304
(201) 434-6778
(201) 434-7406 fax
www.alphametals.com

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : ALPHA FNV0603A Wave Solder Flux

MANUFACTURER'S NAM : ALPHA METALS, INC
ADDRESS: 600 ROUTE 440
JERSEY CITY, NJ 07304

TRANSPORT EMERGENCY #: CHEMTREC: 1-800-424-9300

BUSINESS PHONE : 1-201-434-6778

2. INGREDIENT AND EXPOSURE LIMIT INFORMATION

CHEMICAL NAME	CAS #	% W/W	OSHA PEL - TWA
WATER	7732-18-5	BALANCE	NE
DICARBOXYLIC ACIDS	68937-72-4	< 5%	NE
TETRAGLYME	143-24-8	< 4%	

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: NO EYE HAZARD.

HMIS RATING SYSTEM:
Health: 2 ; Flammability: 1 ; Reactivity: 0 ; Protection: B

NFPA RATING SYSTEM:
Health: 2 ; Flammability: 1 ; Reactivity: 0 ; Protection: B

IMMEDIATE (ACUTE) SYMPTOMS OVER-EXPOSURE BY ROUTE OF EXPOSURE:
INHALATION: NO HAZARD IN NORMAL INDUSTRIAL USE.
EYES: NO HAZARD IN NORMAL INDUSTRIAL USE.
SKIN CONTACT: NO HAZARD IN NORMAL INDUSTRIAL USE.
SKIN ABSORPTION: NO ABSORPTION HAZARD IN NORMAL INDUSTRIAL USE.
INGESTION: NO HAZARD IN NORMAL INDUSTRIAL USE.

LONG TERM (CHRONIC) HEALTH EFFECTS:
CARCINOGENICITY: NONE OF THE SUBSTANCES HAVE BEEN SHOWN TO CAUSE CANCER IN LONG TERM ANIMAL STUDIES. NOT A CARCINOGEN ACCORDING TO NTP, IARC, OR OSHA.
REPRODUCTION: NO DATA AVAILABLE TO INDICATE PRODUCT OR ANY COMPONENTS PRESENT AT GREATER THAN 0.1% MAY CAUSE BIRTH DEFECTS. WOMEN OF CHILD BEARING AGE SHOULD AVOID EXPOSURE TO LEAD AND ITS INORGANIC COMPOUNDS DUE TO POST-NATAL EFFECTS.

Cookson Electronics