

ALPHA® Lead-Free Automotive Electronic Assembly Products cover virtually all challenging automotive applications.

ALPHA® EF-Series Wave Solder Flux†

EF-Series fluxes offer unmatched soldering performance and electrical reliability for challenging automotive electronics applications for both lead-free and tin-lead processes. We are constantly developing fluxes that not only help assemblers meet their soldering and reliability requirements, but also enable them achieve their worker safety and environmental compliance goals.

ALPHA® EF-6100

- No-clean, low-solids, alcohol-based formulation
- Highly pintestable
- Compatible with most conformal coating formulations
- Passes all international reliability standards (see Table)

ALPHA® EF-8000

- Low-rosin, high-activity flux with a wide process window
- Perfect for high throughput requirements
- Particularly effective on high-density boards
- Minimizes solder balls and bridging on bottom side QFPs
- Superior hole fill performance



Cookson Electronics' Quality Systems uniquely position us to supply materials for automotive electronic assembly applications.

- **Global Quality Management System (QMS) assures global product commonality**
- **ISO and OHSAS Certifications: ISO-9000-2000, ISO/TS 16949, ISO/9001, ISO/14001 and OHSAS 18001**
- **Global supply chain guarantees flexibility and responsiveness to customer requirements**
- **TQL product design and development processes**
- **Six Sigma culture assures continuous operational improvement**

ALPHA® EF-2210

- High activity, low-solids, VOC-free formulation
- Provides excellent soldering results, including outstanding hole fill, minimal bridging, icicles and micro solder balls
- Delivers high electrical reliability and passes Bellcore SIR
- Non-flammable formula enhances worker safety
- Does not release harmful emissions into the environment

ALPHA® Lead-Free Solder Paste†

Cookson Electronics' ALPHA® OM-300 Series No-Clean lead-free solder pastes were developed for the wide range of challenging automotive industry applications and offer excellent:

- Reflow profile window compatibility for multiple applications
- Throughput and first pass yield
- Electrical reliability performance
- Conformal coating compatibility

ALPHA® OM-338 PT

- Broad latitude lead-free paste
- Excellent compatibility with conformal coatings
- High reliability in-circuit pin test performance
- Excellent compatibility with enclosed printing heads

ALPHA® OM-345

- Passes Bono Dow 1753 test
- Valeo approval for non-conformal coating applications
- Excellent fine feature printing (280 micron circles)
- IPC Class 3 resistance to BGA voiding

ALPHA® OM-348

- Passes Siemens static test
- Wide reflow process window

ALPHA® OM-350

- Withstands long, hot soak reflow profile
- Excellent wetting and spread
- Resistance to BGA head-in-pillow defect
- High resistance to mid-chip solder balls



† See page 5 for information on specific ALPHA® lead-free solder pastes and EF-Series fluxes, including tables for electrical reliability and conformal coating compatibility results with ELPEGUARD®.

Electrical Reliability Test Method

ALPHA Product	IPC SIR	Bellcore EM SIR	JIS EM SIR	HP ECM	Bono Test	Siemens ZT Static Test	IPC Classification	% VOCs
Solder Paste								
OM-338 PT	Pass	Pass	Pass	Pass			ROLO	N/A
OM-345	Pass	Pass	Pass	Pass	Pass		ROLO	N/A
OM-348	Pass	Pass	Pass	Pass		Pass	ROLO	N/A
OM-350	Pass	Pass	Pass	Pass			ROLO	N/A
Flux								
EF-2210	Pass	Pass	Not Tested	Not Tested	Not Tested	Not Tested	ORLO	<1%
EF-6100	Pass	Pass	Pass	Pass	Not Tested	Pass	ORLO	>80%
EF-8000	Pass	Pass	Pass	Pass	Not Tested	Not Tested	ROLO	>80%

Test data available upon request

Performance Summary

ALPHA® Lead-Free Solder Paste										
ALPHA® Paste Brand	Finest Circular Feature Printed	Maximum Print Speed (mm/sec) 3mm circles (12 mil) circles	8 Hr Stencil Life ¹	Prints Per Wipe ²	Cross Print Spread Largest Gap Bridged		Resistance to BGA Voiding	Out of Jar Response to Pause Straight	Reflow Yield 1-10 (10 Best) 175 Soak	Reflow Yield 1-10 (10 Best) Ramp
					Straight Ramp	Soak Profile				
OM-338 PT	3mm (12mil) Circles	150	Yes	20	0.5mm	0.5mm	Class II	10	Class III Soak 10 Straight Ramp	9
OM-345	3mm (12mil) Circles	150	<4	20	0.8mm	0.8mm	Class III+	10	8	8
OM-348	3mm (12mil) Circles	100	Yes	3	0.9mm	0.9mm	Class III	10	10	9
OM-350	3mm (12mil) Circles	80	Yes	20	0.9mm	0.9mm	Class III+	10	10	10

1. Consistent Print Volume Deposit at 82 degree F (26 degree C)/ 35-40% RH
2. Maximum Print Speed with (.3mm) 12 mil circles

Conformal Coating Compatibility (Range: 1=Best, 4=Worst)										
	Acrylic 1306N	Acrylic 1307 FLZ	Epoxy 1308 FLZ	Silicone 1705 FLZ	Silicone 1706 FLZ	Urethane H ₂ O Cure 1400 Eco	Urethane/ Acrylic 1600 E	FP-105	FP-105-1108	
ALPHA® Paste										
OM-338 PT	N/A	1	2	1	1	1	2	1	1	
OM-345	3	2	3	2	1	3	3	4	4	
OM-348	3	2	3	1	1	3	3	3	4	
OM-350	3	2	3	1	1	3	3	3	4	
ALPHA® Flux										
EF-8000	2	1	1	1	1	2	4	1	1	
EF-2210	Currently under evaluation									
EF-6100	Currently under evaluation									

ELPEGUARD® is a registered trademark of Lackwerke Peters GmbH + Co KG.



Multiple Facility Certification