Choosing the right soldering materials for your selective soldering process can be challenging!

Alpha just made the job much easier for you.

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Selective Soldering Applications Are Increasing Industry-wide.

There has been a rapid increase in the use of selective soldering equipment for PCB assembly over the past several years. This is primarily due to the decrease in the number of through hole devices designed into boards along with the reduced equipment investment required. Because the selective soldering process is so much different than wave soldering, Alpha performed a comprehensive study designed to help our customers identify which of our leading liquid fluxes perform best under different selective soldering conditions. We also identified the specific condition where each flux performed at its best. Simply follow Steps 1 an 2 below to determine which ALPHA® flux best meets your process requirements.

Step 1

Using the following tables (below and top right), identify the conditions that most closely represent your selective soldering process and find the ALPHA® flux(es) that would fit your needs.

Note: Table 1 is for 1.6 mm (0.062") boards, and Table 2 is for 2.4mm (0.93") boards.

Settings required to achieve >75% fill on 100% of holes

Table 1 – 1.6mm Board

Solder Contact Time, seconds	280 °C		295 °C		310 °C	
	FLUX	PROCESS GUIDELINES	FLUX	PROCESS GUIDELINES	FLUX	PROCESS GUIDELINES
5	EF2210	FS**310**, PH**70**	EF5601	FS**190**-250, PH70-**130**	EF2210	FS**190**, PH**70**-130
	EF6000	FS**190**-310, PH70-**130**	EF6000	FS**190**-310, PH70-**130**	EF5601	FS**190**-310, PH**70**-130
	EF6100	FS**310**, PH**70**	EF6100	FS**190**-310, PH70-**130**	EF6000	FS**190**-310, PH70-**130**
	EF6103	FS**190**-310, PH70-**130**	EF6103	FS**190**-310, PH70-**130**	EF6100	FS**190**-310, PH70-**130**
	EF8000	FS**310**, PH**70**-130	EF6850HF	FS**310**, PH**70**	EF6103	FS**190**-310, PH70-**130**
			EF8000	FS**310**, PH**70**-130	EF6850HF	FS**190**-310, PH**70**-130
			EF9301	FS**190**, PH**130**, or; FS**310**, PH**70**	EF8000	FS**190**-310, PH**70**-130
					EF9301	FS**190**-310, PH70-**130**
3.5	EF2210	FS**310**, PH**70**	EF2210	FS**310**, PH**70**	EF2210	FS**190**, PH**130**
	EF6000	FS**310**, PH70-**130**	EF6000	FS**190**-310, PH70-**130**	EF5601	FS**190**-250, PH110-**130**
	EF6103	FS**310**, PH70-**130**	EF6100	FS**310**, PH**70**-130	EF6000	FS**190**-310, PH70-**130**
	EF8000	FS**310**, PH**70**	EF6103	FS**190**-310, PH70-**130**	EF6100	FS**190**-310, PH70-**130**
			EF8000	FS**310**, PH**70**-130	EF6103	FS**190**-250, PH100-**130**
					EF6850HF	FS**190**-310, PH**70**-130
					EF8000	FS**190**-310, PH70-**130**
					EF9301	FS**310**, PH70-100
2	EF2210	FS**310**, PH**70**	EF2210	FS**310**, PH**70**	EF6000	FS**190**-310, PH70-**130**
	EF6000	FS**310**, PH70-**130**	EF6000	FS**310**, PH70-**130**	EF6100	FS**190**, PH**130**, or; FS310, PH70
	EF6103	FS**310**, PH70-**130**	EF6103	FS**310**, PH70-**130**	EF6103	FS**190**, PH**130**
					EF6850HF	FS**190**, PH**70**-130
					EF8000	FS**310**, PH**70**

Solder Pot Temperature, °C

LEGEND

FS = Flux Solids, µg/cm²
PH = Pre-Heat, °C
Green Numbers = Optimum Settings

These are general guidelines which have proven to yield excellent results; however, depending upon your equipment, components, and circuit boards, your optimal settings may be different.

Settings required to achieve >75% fill on 100% of holes

Table 2 – 2.4mm Board

Solder Contact Time, seconds	280 °C FLUX	280 °C PROCESS GUIDELINES	295 °C FLUX	295 °C PROCESS GUIDELINES	310 °C FLUX	310 °C PROCESS GUIDELINES
5	EF6000	FS**190**, PH**130**	EF6000	FS**190**-290, PH100-**130**	EF2210	FS**190**, PH**70**
	EF6103	FS**310**, PH**130**	EF6100	FS**190**, PH**130**	EF6000	FS**190**-310, PH70-**130**
	EF8000	FS**310**, PH**70**	EF6103	FS**190**-310, PH100-**130**	EF6100	FS**190**-310, PH70-**130**
			EF8000	FS250-**310**, PH**70**-100	EF6103	FS**190**-310, PH70-**130**
					EF6850HF	FS**190**-250, PH**70**-130
					EF8000	FS**190**-310, PH**70**-130
3.5	N/A		EF6000	FS**190**, PH**130**	EF6000	FS**190**-310, PH70-**130**
			EF6103	FS**190**, PH**130**	EF6100	FS**190**-310, PH70-**130**
					EF6103	FS**190**, PH100-**130**
					EF6850HF	FS**190**-310, PH**70**-100
					EF8000	FS**310**, PH**70**
2	N/A		N/A		EF6000	FS**190**-250, PH**130**
					EF6100	FS**190**-250, PH**130**
					EF6103	FS**190**, PH**130**
					EF6850HF	FS**190**, PH**70**

Solder Pot Temperature, °C

LEGEND

FS = Flux Solids, µg/cm²
PH = Pre-Heat, °C
Green Numbers = Optimum Settings

These are general guidelines which have proven to yield excellent results; however, depending upon your equipment, components, and circuit boards, your optimal settings may be different.

Step 2

Use the table below to further qualify the right ALPHA® flux for your application based on the flux's electrochemical reliability.

Note: Additional information about each flux can be found at alpha.alent.com.

TYPE	DESCRIPTION	Reliability Requirements: IPC SIR (004A)	BELLCORE SIR	IPC SIR (004B)	JIS / CUSTOM
I	Simple, single sided, FR2 / CEM-1 laminates				EF-12000
II	Dual sided FR-4 w/PTHs, 1.6mm thick, up to 4 inner copper layers, metallized pad finishes		EF-2210		EF-9301(10), EF-5601
III	Complex, up to 12 inner copper layers, OSP pad finishes, all processing in air	EF-6000		EF-6100(P)	EF-6103, EF-6850HF
IV	>2.4mm thick, >12 inner copper layers, large high heat capacity components		EF-8300(LR)		EF-8000(GL)

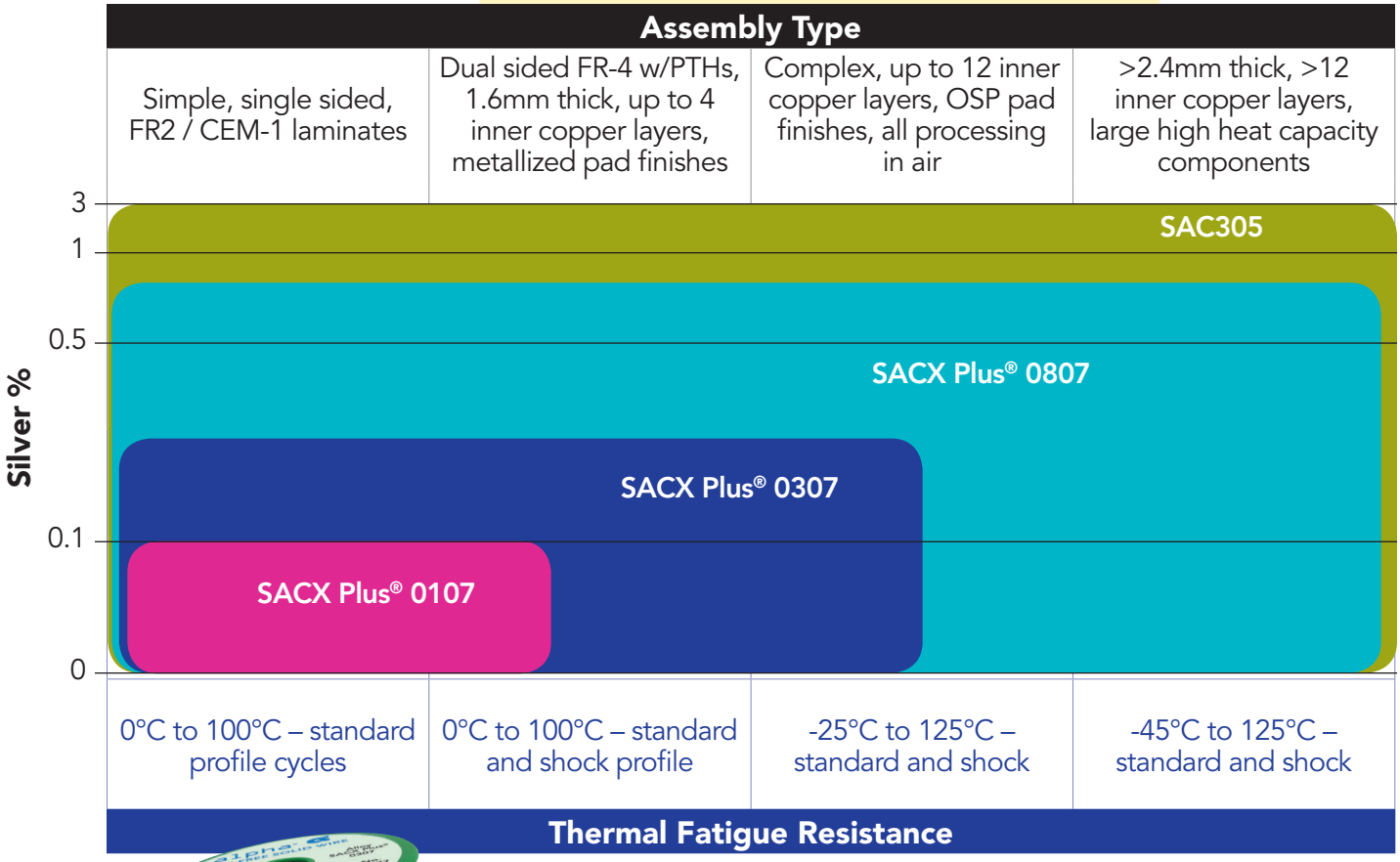
Alcohol Based Water Based

ALPHA® SACX Plus® Alloys

ALPHA® SACX Plus® alloys are ideal for use in selective soldering applications. They are engineered to provide excellent solderability with minimal dross, and they also resist copper dissolution in processes requiring long, high temperature contact times.

Select the right ALPHA® SACX Plus® alloy for your board type using the chart below. You should also consider your mechanical reliability requirements.

Technology Enabling Alloys



All our ALPHA® SACX Plus® alloys are available in a wide variety of diameters in solid wire form for use as a replenishment alloy in most selective soldering machines.

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