

# APPLICATION NOTE

# Flux and Solder Compatibility

Base Metal	Recommended Flux		Recommended Solder Alloy/Indalloy® No.	Incompatible Solder Alloys
	Liquid	Tacky		
Gold (over 0.5µm thick) *(See note 1)	5RMA-RC 1095-NF	TACFlux® 012 (In alloys) TACFlux® 007 (High-Pb & AuSn) TACFlux® 025-NP (Water-Soluble)	In/Pb alloys #2 (80In/15Pb/5Ag) #4 (100In) #182 (80Au/20Sn) High-Pb alloys (Pb/In, Pb/In/Ag)	Sn, Sn/Pb, In/Sn, Sn/Pb/In, Sn/Pb/Bi
ENIG	5RMA-RC (In- and Bi-containing) FP-500 or 3545 (SAC, SnPb) 1095-NF or FP-300	TACFlux® 020B-RC (SnPb & SAC) TACFlux® 012 (In alloys) TACFlux® 007 (High-Pb & AuSn) TACFlux® 571HF (BiSn alloys) TACFlux® 025-NP (Water-Soluble)	#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys #121 (96.5Sn/3.5Ag) In alloys #182 (80Au/20Sn) High-Pb alloys Sn/Bi alloys	Compatible with most solder alloys
Silver *(See note 2)	5RMA-RC (In- and Bi-containing) FP-500 or 3545 (SAC, SnPb) 1095-NF or FP-300	TACFlux® 020B-RC (SnPb & SAC) TACFlux® 007 (High-Pb & AuSn) TACFlux® 025-NP (Water-Soluble)	#104 (62Sn/36Pb/2Ag) SAC alloys #121 (96.5Sn/3.5Ag) High-Pb alloys	Compatible with most solder alloys
Palladium and Platinum	5RMA-RC (In- and Bi-containing) FP-500 or 3545 (SAC, SnPb) 1095-NF or FP-300		Compatible with most solder alloys	Compatible with most solder alloys
Clean Cu	5RMA-RC (Bi-containing) FP-500 or 3545 (SAC, SnPb) 1095-NF or FP-300	TACFlux® 020B-RC (SnPb & SAC) TACFlux® 571HF (BiSn alloys) TACFlux® 025-NP (Water-Soluble)	#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys #121 (96.5Sn/3.5Ag) Sn/Bi alloys #133 (95Sn/5Sb)	In, In/Pb, In/Sn, In/Pb/Ag *(See note 4)
HASL Finish (Sn & Sn/Pb)	5RA-RC (Bi-containing) 5RMA-RC (Bi-containing) FP-500 or 3545 (SAC, SnPb) 1095-NF or FP-300	TACFlux® 020B-RC (SnPb & SAC) TACFlux® 571HF (BiSn alloys) TACFlux® 025-NP (Water-Soluble)	#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys Sn/Bi alloys	In-containing solders *(See note 3)
Oxidized Cu & Cu Alloys (Brass, Bronze)	5RA-RC 1095-NF Flux #6		#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys	In-containing solders *(See note 4)
Nickel (Ni) and Kovar	5RA-RC 1095-NF Flux #6		#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) In/Pb alloys SAC alloys	Compatible with most solder alloys
Aluminum	Flux #6		#201 (91Sn/9Zn) #176 (95Zn/5Al) #121 (96.5Sn/3.5Ag)	Sn/Pb due to poor corrosion resistance
Stainless Steel	42-SS, Flux #2, Flux #6, *(See note 5)		#121 (96.5Sn/3.5Ag) #1E (52In/48Sn) #182 (80Au/20Sn) #106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys	Avoid Pb and Cd for food applications
Steel	Flux #1		#106 (63Sn/37Pb) Sn62 (62Sn/36Pb/2Ag) SAC alloys	Compatible with most solder alloys

See reverse side for notes.

From One Engineer To Another®



Form No. 97751 R7

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**Note 1:** In/Pb alloys have a wide temperature range from 175–313°C (Indalloy®7, 10, 11, 150, 204, 205, and 206). For specific melting temperatures, refer to the Solder Alloy Guide at [www.indium.com](http://www.indium.com)

**Note 2:** When soldering to silver (Ag), it is recommended that the solder also contain some Ag, such as Indalloy®121 (96.5Sn/3.5Ag), 62Sn/36Pb/2Ag, or Indalloy®151 (92.5Pb/5Sn/2.5Ag)

**Note 3:** Avoid solders that contain indium (In) when soldering to Sn or Sn/Pb. It is possible for localized pockets of the In/Sn eutectic to form, which melts at 118°C.

**Note 4:** Avoid solders that contain In when soldering to Cu. In and Cu diffuse into one another and form a brittle inter-metallic.

**Note 5:** Use 42-SS or Liquid Flux #2 for applications which do not require prolonged heating, and Liquid Flux #6 for applications which do require prolonged heating to reflow the solder.

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*All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified.  
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