

The information below details some of the key capabilities that NCAB Group can offer and support today. You will find information here relating to the specific materials we can support, the PCB technologies or product types which we currently produce, as well as some of the tolerances which we can achieve.

The first category is what we call “standard” and means we can offer each individual parameters from multiple sources. The second is our “advanced” offering and this shows the very best that NCAB can offer, but here the supply chain or sourcing options is limited and in some cases this means that only one plant is capable of this parameter.

When using combinations of these parameters, you should always consult your local NCAB technical contact person.

Feature	2019		2020		2021	
	Standard	Advanced	Standard	Advanced	Standard	Advanced
Materials Please contact NCAB Group for full details regarding material availability.	RIGID: FR2, CEM-1, CEM-3, FR4 (standard – halogen free – high performance) including: ShengYi, Iteq, Elite Materials Corp., NanYa, Kingboard, Grace, GoWorld, TUC, Meteorwave, Ventec, Isola, Nelco, Rogers, Taconic, Panasonic FLEX: PI, PET including: Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan. Hanwha, SF305 IMS: IMS Al based including: Bergquist MP, HT & CML ITEQ T-Lam, Laird TLAM SS Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan	RIGID: Mid-Loss material: TUC TU862HF, EMC EM370D, ITEQ IT170GRA, Panasonic Megtron-2 Low-loss material: N4000-13(series), FR408HR, Megtron-4, S7038, S7439, S7439C, TU872SLK (series), EM-828, EM888, N4800-20(series), I-Speed, IT968 Ultra-Low loss material: Megtron-6, IT150DA, FX-2, FL-700, I-Tera, N6800-22(series), RO4350B, RO3000(series), RF-35, RF-35A2, TLX (series), AD250, FL-700LD Super Low – Loss material and High Thermal Reliability Laminate: TU993,M6N,M7N, IT988GSE FLEX: PI, LCP including Dupont IMS: IMS Al & Cu based including: Bergquist HPL, Ventec VT, Polytronics TCB, Doosan DST, Denka, Arlon, Chin-Shi	RIGID: FR2, CEM-1, CEM-3, FR4 (standard – halogen free – high performance) including: ShengYi, Iteq, Elite Materials Corp., NanYa, Kingboard, Grace, GoWorld, TUC, Meteorwave, Ventec, Isola, Nelco, Rogers, Taconic, Panasonic, Hitachi FLEX: PI, PET including: Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan. Hanwha, SF305 IMS: IMS Al & Cu based including: Bergquist MP, HT & CML ITEQ T-Lam, Laird TLAM SS Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan	RIGID: Mid-Loss material: TUC TU862HF, EMC EM370D, ITEQ IT170GRA, Panasonic Megtron-2 Low-low loss material: N4000-13(series), FR408HR, Megtron-4, S7038, S7439, S7439C, TU872SLK (series), EM-828, EM888, N4800-20(series), I-Speed, IT968 Ultra Low-Loss material: Megtron-6, IT-150DA, FX-2, FL-700, I-Tera, N6800-22(series), RO4350B, RO3000(series), RF-35, RF-35A2, TLX (series), AD250, FL-700LD, Super Low – Loss material and High Thermal Reliability Laminate: TU993,M6N,M7N, IT988GSE FLEX: PI, LCP including: Dupont IMS: IMS Al & Cu based including: Bergquist HPL, Ventec VT, Polytronics TCB, Doosan DST, Denka, Arlon, Chin-Shi	RIGID: FR2, CEM-1, CEM-3, FR4 (standard – halogen free – high performance) including: ShengYi, Iteq, Elite Materials Corp., NanYa, Kingboard, Grace, GoWorld, TUC, Meteorwave, Ventec, Isola, Nelco, Rogers, Taconic, Panasonic, Hitachi FLEX: PI, PET including: Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan. Hanwha, SF305 IMS: IMS Al & Cu based including: Bergquist MP, HT & CML, ITEQ T-Lam, Laird TLAM SS Taiflex, Dupont FR & AP, Panasonic, ShengYi, Doosan.	RIGID: Mid-Loss material: TUC TU862HF, EMC EM370D, ITEQ IT170GRA, Panasonic Megtron-2 Low-Low loss material: N4000-13(series), FR408HR, Megtron-4, S7038, S7439, S7439C, TU872SLK (series), EM-828, EM888, N4800-20(series), I-Speed, IT968 Ultra-Low Loss material: Megtron-6, IT-150DA, FX-2, FL-700, I-Tera, N6800-22(series), RO4350B, RO3000(series), RF-35, RF-35A2, TLX (series), AD250, FL-700LD, Super Low – Loss material and High Thermal Reliability Laminate: TU993,M6N,M7N, IT988GSE FLEX: PI, LCP including: Dupont IMS: IMS Al & Cu based including: Bergquist HPL, Ventec VT, Polytronics TCB, Doosan DST, Denka, Arlon, Chin-Shi
Minimum dielectric thickness	0.05mm for PCB 0.025mm for FPC	0.025mm for PCB 0.012mm for FPC	0.05mm for PCB 0.025mm for FPC	0.025mm for PCB 0.012mm for FPC	0.05mm for PCB 0.025mm for FPC	0.025mm for PCB 0.012mm for FPC
Layer count	1 – 38L / 40L QTA	68L (pilot runs)	1 – 38L / 40L QTA	100L (pilot runs)	1 – 38L / 40L QTA	120L (pilot runs)
HDI / Buried – blind via	Y	Y	Y	Y	Y	Y
Copper filled BVH (Y/N)	Y	Y	Y	Y	Y	Y
Copper filled PTH (Y/N)	Y	Y – copper paste	Y	Y – copper paste	Y	Y – copper paste
Copper paste filled PTH (Y/N)	Y	Y	Y	Y	Y	Y
Capped via (Y/N)	Y	Y	Y	Y	Y	Y
LDI (Y/N)	Y	Y	Y	Y	Y	Y

	2019		2020		2021	
Feature	Standard	Advanced	Standard	Advanced	Standard	Advanced
Maximum board size (mm)	1050 x 610	1400 X 610	1050 x 610	1400 X 610	1050 x 610	1400 X 610
Minimum board thickness 2L (mm)	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC	0.15 for PCB 0.05 for 1L FPC 0.12 for 2L FPC
Minimum board thickness >=4L (mm)	0.25 for PCB 0.20 for FPC	0.25 for PCB 0.16 for FPC	0.25 for PCB 0.20 for FPC	0.25 for PCB 0.16 for FPC	0.25 for PCB 0.20 for FPC	0.25 for PCB 0.16 for FPC
Maximum board thickness (mm)	8.6	10.0	8.6	10.0	8.6	14.0
Minimum track / gap IL (mil)- copper weight dependant	0.075mm	0.05mm	0.075mm	0.075mm	0.075mm	0.05mm
Minimum track / gap OL (mil)- copper weight dependant	0.075mm	0.05mm	0.075mm	0.075mm	0.075mm	0.05mm
Minimum pitch of laser	0.50mm	0.35mm	0.50mm	0.35mm	0.50mm	0.30mm
Surface finish	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / IAG+GF/ Isn+GF /ENEPIG / selective hard gold / Selective soft gold / flash gold	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / ENEPIG / SPF/ IAG+GF / Isn+GF	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / IAG+GF/ Isn+GF /ENEPIG / selective hard gold / Selective soft gold / flash gold	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / ENEPIG / SPF/ IAG+GF / Isn+GF / EPAG / ISIG	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / IAG+GF/ Isn+GF /ENEPIG / selective hard gold / Selective soft gold / flash gold	ENIG / GF / OSP / I Ag / HASL (lead) / HASL (Leadfree) / Plating Au/Ni/ Immersion Sn / GF+OSP / GF+HASL / OSP+ENIG / ENEPIG / SPF/ IAG+GF / Isn+GF / EPAG / ISIG
Minimum bonding pad size / gap	125/125µm	65/65µm	125/125µm	56/56µm	125/125µm	56/56µm
Layer to layer registration	0.05mm	25µm	0.05mm	25µm	0.05mm	25µm
Minimum hole (mech) (mm/mil)	0.15mm	0.10mm	0.15mm	0.10mm	0.15mm	0.10mm
Minimum hole (laser) (mm/mil)	0.075mm	0.05mm	0.075mm	0.05mm	0.075mm	0.05mm
Aspect ratio PTH	20:1	22:1	20:1	25:1	20:1	27:1
Aspect ration BVH	0.8:1	1.3:1 (factory + design dependant)	0.8:1	1.3:1 (factory + design dependant)	0.8:1	1.3:1 (factory + design dependant)
Finish hole tolerance (PTH)	± 0.076mm	± 0.05mm	± 0.076mm	± 0.04mm	± 0.076mm	± 0.04mm
Finish hole tolerance (NPTH)	± 0.0375	± 0.025	± 0.0375	± 0.025	± 0.0375	± 0.025
Maximum Cu weight OL	12 oz	30 oz	12 oz	30 oz	12 oz	30 oz
Maximum Cu weight IL	12 oz	30 oz	12 oz	30 oz	12 oz	30 oz
Controlled impedance (+/- X%)	Others ± 10%	± 5%	Others ± 10%	± 5%	Others ± 10%	± 5%
Minimum Solder mask clearance	0.075mm	0.025mm	0.075mm	0.025mm	0.075mm	0.025mm
Minimum Solder mask dam	0.10mm	0.05mm	0.10mm	0.05mm	0.10mm	0.05mm
Rigid-flex (Y/N)	Y	Y including semi flex	Y	Y including semi flex	Y	Y including semi flex
Flexible (Y/N)	Y	Y	Y	Y	Y	Y
IMS (Y/N)	Y (Al)	Y (both Al and Cu)	Y (Al)	Y (both Al and Cu)	Y (Al)	Y (both Al and Cu)
Embedded components (Y/N)	Y	Y	Y	Y	Y	Y
Soldermask via plugging IPC4761 Type VI (Y/N)	Y	Y	Y	Y	Y	Y
Epoxy via plugging IPC4761 Type VI (Y/N)	Y	Y	Y	Y	Y	Y
Epoxy via plugging IPC4761 Type VII (Y/N)	Y	Y	Y	Y	Y	Y
Copper paste via plugging IPC4761 Type VI (Y/N)	Y	Y	Y	Y	Y	Y
Silver paste via plugging IPC4761 Type VI (Y/N)	Y	Y	Y	Y	Y	Y
IC substrate	N	N	N	Y	N	Y