ES-88-E: FINISH SPECIFICATION – SELECTIVE GOLD WITH SELECTIVE TIN

1.0 SCOPE
This specification defines the requirements for all SELECTIVE GOLD WITH SELECTIVE TIN finishes on metallic surfaces.

2.0 PURPOSE
To define the standard finish characteristics and finish codes along with their minimum and maximum layer requirements.

3.0 REFERENCE DOCUMENTS
ES-88 Molex Finish Specification

4.0 DEFINITIONS

4.1 Finish Specification Codes

4.1.1 Selective Hard Gold with Selective Tin over Nickel Overall

Note: See ES-88 for specific material properties, quality, packaging, etc. details.
Conversion factor 1µm = 39.37µin

PROCESS CODE	APPEARANCE CODES	FINISH CODE	SELECT HARD GOLD MIN µin (µm) MAX µin (µm)	SELECT TIN MIN µin (µm) MAX µin (µm)	OVERALL NICKEL MIN µin (µm) MAX µin (µm)	OBSOLETE/ RECOMMENDED
	M	206	30(0.76)	80(2.03)	50(1.27)	
	M	207	15(0.38)	80(2.03)	50(1.27)	
	M	208	15(0.38)	100(2.54)	50(1.27)	
	B	209	15(0.38)	100(2.54)	50(1.27)	
	B	210	2(0.05) 10(0.25)	100(2.54)	50(1.27)	
	B	211	2(0.05) 10(0.25)	150(3.81)	50(1.27)	
	B	212	2(0.05) 10(0.25)	200(5.08)	50(1.27)	
	B	213	30(0.76)	100(2.54)	50(1.27)	
	B	214	30(0.76)	150(3.81)	50(1.27)	
	B	215	30(0.76)	200(5.08)	50(1.27)	
	B	216	50(1.27)	100(2.54)	50(1.27)	
	B	217	50(1.27)	150(3.81)	50(1.27)	
	B	218	50(1.27)	200(5.08)	50(1.27)	
	M	225	2(0.05) 10(0.25)	100(2.54)	50(1.27)	

UNLESS OTHERWISE SPECIFIED MAXIMUM FINISH THICKNESS ALLOWED ABOVE MINIMUMS:

Continuous and Batch Plating:

Nickel	Continuous plating	50µ" (1.27µm)
	Batch plating	50µ" (1.27µm)
Gold	Continuous plating	50µ" (1.27µm)
	Batch plating	100µ" (2.54µm)
Tin	Continuous plating	100µ" (2.54µm)
	Batch plating	250µ" (6.35µm)

4.1.1 Selective Hard Gold with Selective Tin over Nickel Overall (Continued…)

Note: See ES-88 for specific material properties, quality, packaging, etc. details.
Conversion factor 1µm = 39.37µin

PROCESS CODE	APPEARANCE CODES	FINISH CODE	SELECT HARD GOLD MIN µin (µm) MAX µin (µm)	SELECT TIN MIN µin (µm) MAX µin (µm)	OVERALL NICKEL MIN µin (µm) MAX µin (µm)	OBSOLETE/ RECOMMENDED
	M	226	2(0.05) 10(0.25)	150(3.81)	50(1.27)	
	M	227	2(0.05) 10(0.25)	200(5.08)	50(1.27)	
	M	228	30(0.76)	100(2.54)	50(1.27)	
	M	229	30(0.76)	150(3.81)	50(1.27)	
	M	230	30(0.76)	200(5.08)	50(1.27)	
	M	231	50(1.27)	100(2.54)	50(1.27)	
	M	232	50(1.27)	150(3.81)	50(1.27)	
	M	233	50(1.27)	200(5.08)	50(1.27)	
	M	237	50(1.27)	100(2.54)	250(6.35)	
	S	238	30(0.76)	200(5.08) 400(10.16)	50(1.27)	
	M	240	10(0.25)	150(3.81)	50(1.27)	
	M	241	20(0.51)	100(2.54)	50(1.27)	
	M	242	30(0.76) 40(1.02)	100(2.54) 150(3.81)	150(3.81) 200(5.08)	
	M	243	50(1.27)	75(1.91)	150(3.81)	
	M, B	249	15(0.38)	75(1.91)	50(1.27)	
	M, B	250	30(0.76)	75(1.91)	50(1.27)	
	M	252	10(0.25)	100(2.54)	80(2.03)	

UNLESS OTHERWISE SPECIFIED MAXIMUM FINISH THICKNESS ALLOWED ABOVE MINIMUMS:

Continuous and Batch Plating:

Nickel	Continuous plating	50µ" (1.27µm)
	Batch plating	50µ" (1.27µm)
Gold	Continuous plating	50µ" (1.27µm)
	Batch plating	100µ" (2.54µm)
Tin	Continuous plating	100µ" (2.54µm)
	Batch plating	250µ" (6.35µm)

4.1.2 Selective Hard Gold with Selective Tin with Selective Gold Flash over Nickel Overall

Note: See ES-88 for specific material properties, quality, packaging, etc. details.
Conversion factor 1µm = 39.37µin

PROCESS CODE	APPEARANCE CODES	FINISH CODE	SELECT HARD GOLD MIN µin (µm) MAX µin (µm)	SELECT TIN MIN µin (µm) MAX µin (µm)	SELECT GOLD FLASH MIN µin (µm) MAX µin (µm)	OVERALL NICKEL MIN µin (µm) MAX µin (µm)	OBSOLETE/ RECOMMENDED
E	M, B	247	15(0.38) 25(0.64)	80(2.03) 180(4.57)	2(0.05) 10(0.25)	80(2.03) 180(4.57)	
E	M, B	248	30(0.76) 40(1.02)	80(2.03) 180(4.57)	2(0.05) 10(0.25)	50(1.27) 100(2.54)	

UNLESS OTHERWISE SPECIFIED MAXIMUM FINISH THICKNESS ALLOWED ABOVE MINIMUMS:

Continuous and Batch Plating:

Nickel	Continuous plating	50µ" (1.27µm)
	Batch plating	50µ" (1.27µm)
Gold	Continuous plating	50µ" (1.27µm)
	Batch plating	100µ" (2.54µm)
Tin	Continuous plating	100µ" (2.54µm)
	Batch plating	250µ" (6.35µm)

4.1.3 Selective Extra Hard Gold with Selective Tin over Nickel Overall

Note: See ES-88 for specific material properties, quality, packaging, etc. details.
Conversion factor 1µm = 39.37µin

PROCESS CODE	APPEARANCE CODES	FINISH CODE	SELECT EXTRA HARD GOLD MIN µin (µm) MAX µin (µm)	SELECT TIN MIN µin (µm) MAX µin (µm)	OVERALL NICKEL MIN µin (µm) MAX µin (µm)	OBSOLETE/ RECOMMENDED
	M	246	30(0.76) 40(1.02)	100(2.54) 150(3.81)	150(3.81)	

UNLESS OTHERWISE SPECIFIED MAXIMUM FINISH THICKNESS ALLOWED ABOVE MINIMUMS:

Continuous and Batch Plating:

Nickel	Continuous plating	50µ" (1.27µm)
	Batch plating	50µ" (1.27µm)
Gold	Continuous plating	50µ" (1.27µm)
	Batch plating	100µ" (2.54µm)
Tin	Continuous plating	100µ" (2.54µm)
	Batch plating	250µ" (6.35µm)