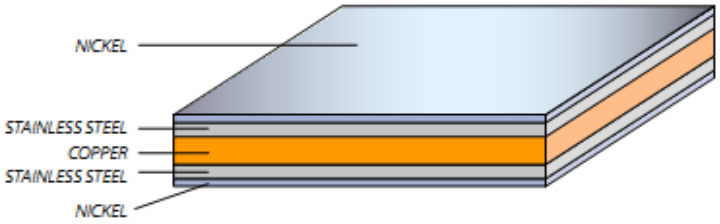
Engineered Materials Solutions
Wickeder Group

SIGMACLAD™ 40

Joining Solution for Li-Ion Battery Packs

Material Attributes

- Resistance / Laser Weldable
- Solderable surface
- Superior conductivity to pure Nickel
- High power capacity
- Stainless steel layers provide robust welds
- Lighter weight (lower density)
- Increased conductivity enables gauge reductions
- Nickel surface provides high contact Corrosion protection



Physical Properties (typical properties)	PC799-40 Annealed	Nickel Annealed	Nickel 1/4 Hard
Density: Lbs/in^3 (g/cm^3)	0.299 (8.28)	0.321 (8.89)	0.321 (8.89)
Yield Stress: Ksi (MPa)	35 (241)	15 (103)	35 (241)
Tensile Strength: Ksi (MPa)	75 (517)	60 (414)	70 (483)
Elongation %	40	45	35
Erichsen Cup Height (mm)	11.2	12.1	9.6
Elastic Modulus: Msi (GPa)	24 (165)	30 (207)	30 (207)
CTE: µin/in/°F (µm/m/°C)	9.2 (16.6)	7.4 (13.3)	7.4 (13.3)
Thermal Conductivity[2]: BTU-ft/h-ft^2-°F (W/mK)	97 (167)	42 (73)	42 (73)

(1) Properties can vary depending on finish thickness
(2) Parallel to strip direction

Description

EMS Designation	PC799-40
Composition	Nickel / Austenitic Stainless Steel / Copper / Austenitic Stainless Steel / Nickel
Ratio	40% Copper

Availability

Surface	Medium luster matte finish
Temper	Annealed Standard (specific tempers also available)
Hardness	H_v 150-210 (stainless steel)
Thickness	0.004 - 0.024" (0.10 - 0.60 mm)
Width	0.10 - 12.00" (2.5 - 305mm

Electrical Properties @ 75°F (typical properties)	PC799-40		201Ni	
Conductivity - % IACS (1)	40.0%		19.6 - 22.6	
Resistivity - Ω/CMF(1) (Ω-m)	25.9	(0.043)	46-55	(0.076 - 0.091)

39 Perry Avenue Attleboro, MA 02703 • Phone: 1.508.342.2100 • www.emsclad.com

Engineered Materials Solutions
Wickeder Group

SIGMACLAD™ 40

Joining Solution for Li-Ion Battery Packs

Soldering

Welding

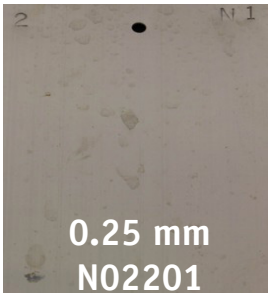
Material	Thickness (mm)	Electrode Config.	Pull Strength (Cathode / Anode) {Lbs}
PC799-40	0.254	Parallel	51/61
PC799-40	0.406	Parallel	67/43
PC799-60	0.381	Parallel	51/69
PC799-60	0.508	Step	84/84

Good Solderability with Sn/Cu solder with rosin core
Welds readily with dual pulse welder, weld projections, and/or anti-shunt slot [3]

[3] Welding method required depends on bulk thickness and electrical conductivity.

Corrosion Resistance

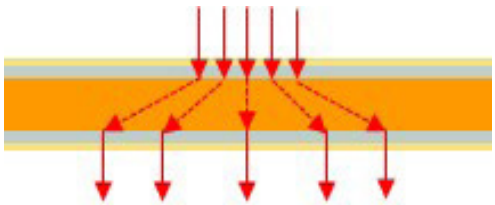
One Cycle: Dip samples in ASTM D2570 Water (148 mg Sodium Sulfate, 165 mg Sodium Chloride, and 138 mg Sodium Bicarbonate dissolved in 1 litre of distilled or deionized water). Expose samples 16 hours in condensing humidity chamber (100% Relative Humidity. 100°F). 8 hour air dry.

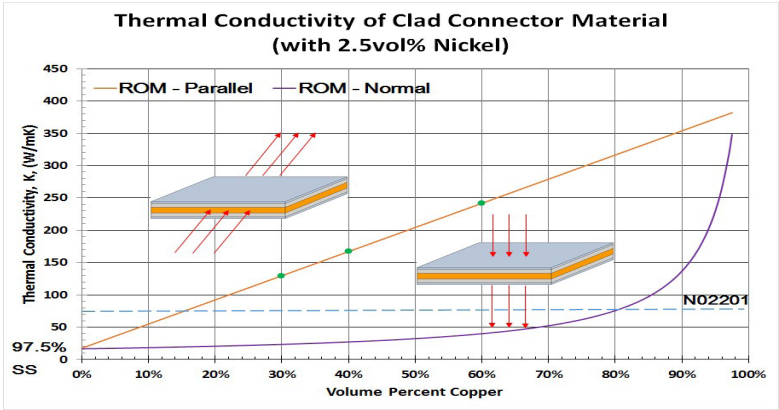


Corrosive Dip with ASTM D2570 Water
Excellent corrosion resistance

Thermal Conductivity

Illustration of heat spreading





North America
Craig Durflinger
Business Development Manager
Phone: +1 508 838 5207
Email: cdurflinger@emsclad.com

Europe
James Craggs
Business Development Manager
Phone: +44 77 99 358 150
Email: jcraggs@emsclad.com

Asia
C.W. Kong
General Manager
Phone: +86 514 8891 6888
Email: c.w.kong@emsclad.com.cn