


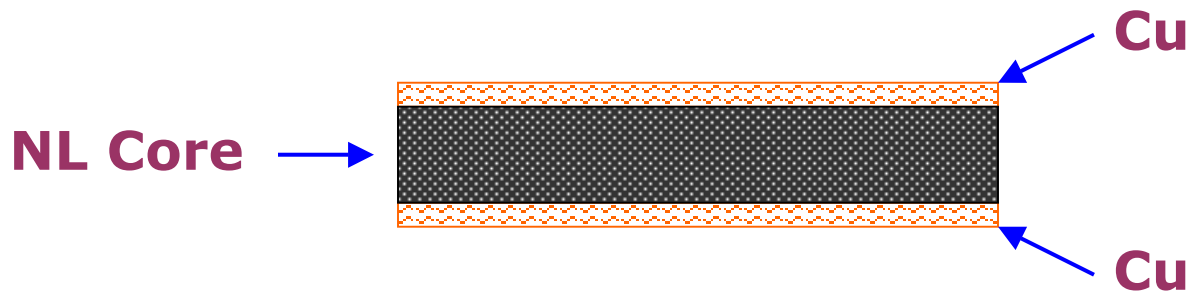
Description of NL Core:	
What is NL Core:	Copper clad, epoxy-resin laminate, without glass fabric in the core.
Comparison:	Better than BT, CCL-HL832, BN300 and MCL-E-679
Benefits:	Uniform CTE - X, Y and Z = 10ppm/°C (<Tg) Very low moisture absorption (3 times better than BT) MSL2 - currently. MSL1 - In development Enhanced thermal conductivity Excellent multi layer stack up registration. Very low CAF resistance. Dust Free (Punching).
Green: 	The entire manufacturing process of NL Core is green. NL-core has no carcinogens, no chemicals, and no solvents. Hydrolysable halides level < 1.0ppm Environmentally friendly Halide free. RoHS compatible.
Applications:	<p><b>Semiconductor Grade:</b></p> <ol style="list-style-type: none"> <li>1. Excellent for DDR2 and DDR3</li> <li>2. Core build-up for semiconductor packages</li> <li>3. PoP and 3D packages</li> </ol> <p><b>Computer Grade:</b></p> <ol style="list-style-type: none"> <li>4. Multilayer PCB</li> </ol>

Road Map:	Phase 1 2008	Phase 2 2009	Phase 3 2010 ~ 11
Production	Pilot Line	Engineering	Volume Production
Sheet Size	150 x 250mm (6" x 10")	400 x 500mm (16"x 20")	400 x 500mm and Larger
Layer	2L	4L	>6L
Core Thickness	0.2 ~ 0.36mm	0.1mm ~ 0.56mm	0.025 ~ 3mm
Cu Copper	17 ~ 35um (1/2 oz ~ 1 oz)	12 ~ 70um (1/4 oz ~ 2 oz)	12 ~ 200um (1/4 oz ~ 6 oz)
Direct Die Attach	-	B-Stage Die-Attach	B-Stage Die-Attach
Other development	-	Low moisture Hole plug	Low moisture Hole plug

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# NL Core

For BGA Substrates  
*In Development*



**CTE X = Y = Z**

**MSL < BT**

**¥ < BT**

