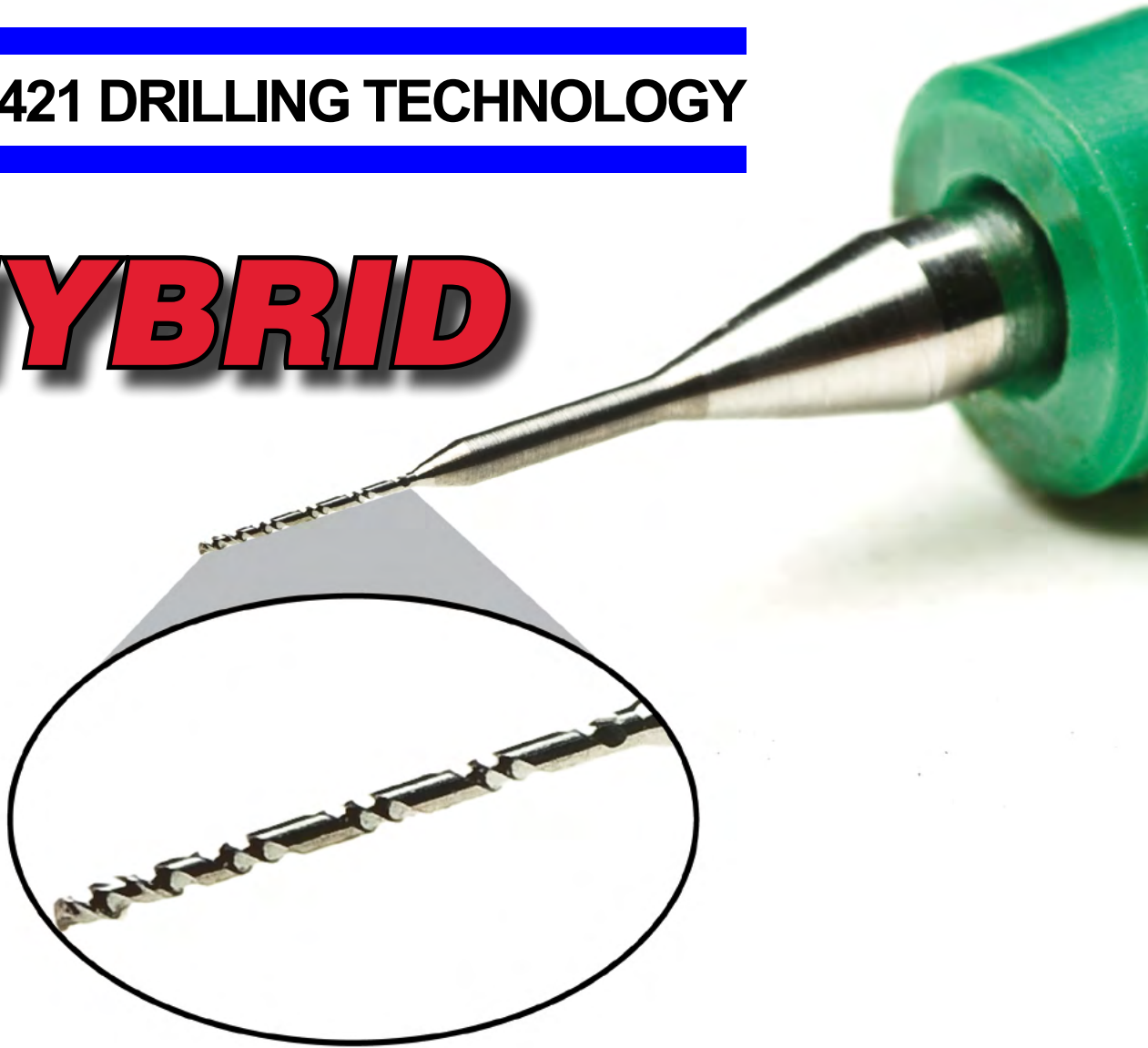

SERIES 421 DRILLING TECHNOLOGY

HYBRID



FEATURES

- New Generation Two into One Optimized Flute Geometry
- Optimized Core Thicknesses
- Diameter Range from 0.10mm (0.004-inch) to 0.45mm (0.0177-inch)
- Standard & Extended Flute Lengths Available
- Designed/Developed in the USA

BENEFITS

- Consistent Flute Volume Over the Full Flute Improves Debris Evacuation
- Optimum Hole Location Performance for Increased Stack Heights and High Aspect Ratio Parts
- Improved Breakage Resistance

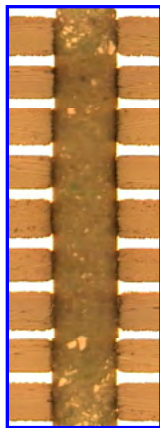


Diameter Metric	Diameter Inch	Standard Flute Length	Part Number	Extended Flute Length	Part Number
0.10mm	0.0039"	2.0mm/ 0.079"	421.0039.079	n/a	n/a
0.13mm	0.0050"	2.0mm/ 0.079"	421.0050.079	n/a	n/a
0.15mm	0.0059"	2.5mm/ 0.098"	421.0059.098	n/a	n/a
0.20mm	0.0079"	3.0mm/ 0.118"	421.0079.118	4.0mm/ 0.158"	421.0079.158
0.25mm	0.0098"	4.0mm/ 0.158"	421.0098.158	5.0mm/ 0.197"	421.0098.197
0.275mm	0.0110"	5.0mm/ 0.197"	421.0110.197	5.5mm/ 0.217"	421.0110.217
0.30mm	0.0118"	5.0mm/ 0.197"	421.0118.197	5.5mm/ 0.217"	421.0118.217
0.35mm	0.0138"	5.5mm/ 0.217"	421.0138.217	6.5mm/ 0.256"	421.0138.256
0.40mm	0.0157"	6.0mm/ 0.236"	421.0157.236	7.5mm/ 0.295"	421.0157.295
0.45mm	0.0177"	6.0mm/ 0.236"	421.0177.236	7.5mm/ 0.295"	421.0177.295

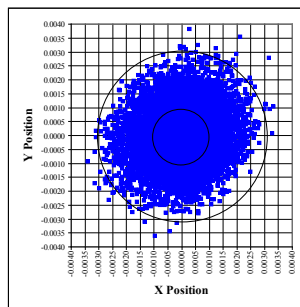
IMPROVED HOLE LOCATION

Conventional UC Series

HYBRID Series 421

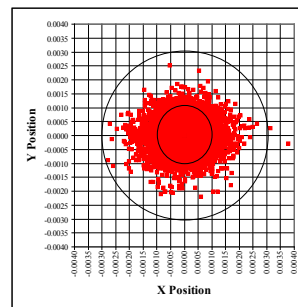


177% Max Nailheading



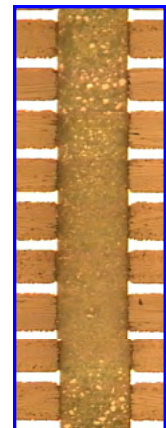
Cp 1.62 (0.003" Radial Spec.)

Material: ISOLA 370HR
Copper Content: 18 Layers / 1oz.
Drill P/N: 421.0098.157



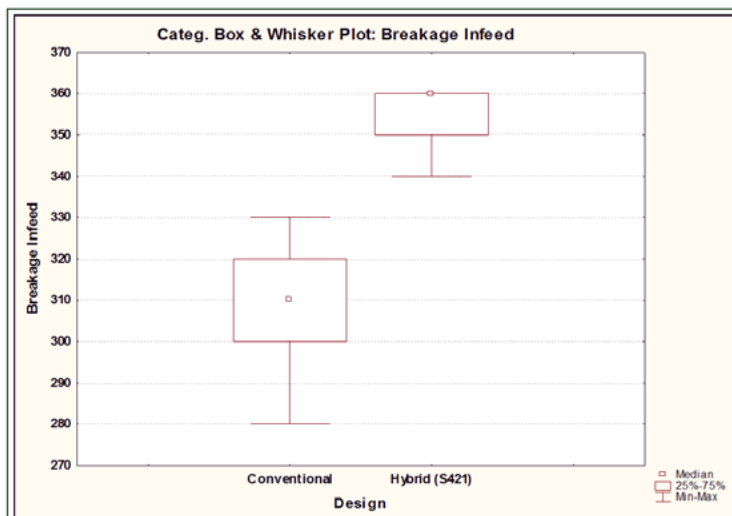
Cp 2.33 (0.003" Radial Spec.)

Thickness: 0.103"
Hit Count: 2300
Drill Dia.: 0.0098"



176% Max Nailheading

IMPROVED BREAKAGE RESISTANCE



COMING JANUARY 2013

NANO

Proprietary Coating/ HYBRID Design