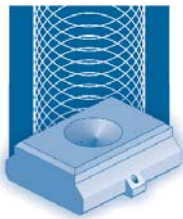
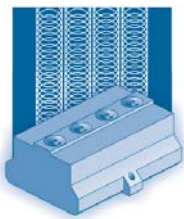



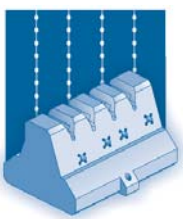


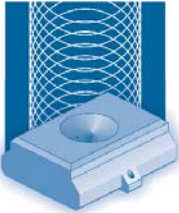
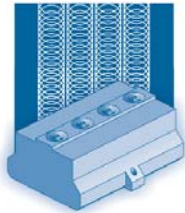


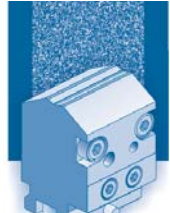
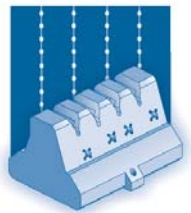


Product Comparison: Universal™ Spray Nozzles

	CF® Nozzles	Summit™ Nozzles	Continuous Signature® Nozzles	Intermittent Signature® Nozzles	Control Coat® Nozzles	SureWrap™ Nozzles
Nozzle						
Key Attributes	Overlapping Spirals	Overlapping Mini-spirals	Random Fibers	High-speed Intermittent	Uniform	Point Bonding of Elastic
Module Compatibility	All Universal modules	All Universal modules	All Universal modules	All Universal modules	UM25, UMSC, E400U, UM3	All Universal modules
Materials of Construction	Brass with hard-release coating	Brass with hard-release coating, available in steel	Stainless steel base, clamp and shims, steel fasteners and elastomeric seal	Stainless steel base, clamp and shims, steel fasteners and elastomeric seal	Stainless steel	Brass with hard-release coating and steel inserts, available in steel
Edge Control	±4 mm (±0.16 in.)	±2 mm (±0.08 in.)	±2 mm (±0.08 in.)	±2 mm (±0.08 in.)	±1.5 mm (±0.06 in.)	N/A
Coating Width (per nozzle)	Full coverage 22 to 25 mm	Full coverage 22 to 25 mm coverage, or partial coverage (side or center justified)				Single or multiple elastic strands spaced as close as 3 mm on center
Nozzle Orifice Sizes (22 and 25 mm)	0.305 to 0.762 mm (0.012 to 0.030 in.)	25 mm nozzles: 0.46 mm (0.018 in.); 22 mm nozzles: 0.51 mm (0.020 in.)	22 and 25 mm: 0.5 x 0.5 mm (0.020 x 0.020 in.)	0.3 x 0.4 mm (0.012 x 0.016 in.)	0.1 mm (0.004 in.) wide slot	0.51 mm (0.020 in.)
Nozzle-to-Substrate Distance	12 to 75 mm (0.5 to 3.0 in)	10 to 30 mm (0.38 to 1.2 in.), 20 mm recommended	30 to 70 mm (1.18 to 2.76 in.)	20 to 40 mm (0.08 to 1.6 in.)	10 to 30 mm (0.38 to 1.2 in.)	Contact
Maximum Hydraulic Flow	100 grams per minute per nozzle at 10,000 cps	100 grams per minute per nozzle at 10,000 cps	100 grams per minute per nozzle at 5,000 cps	100 grams per minute per nozzle at 5,000 cps	50 grams per minute per nozzle at 10,000 cps, 14 GSM @ 300 m/min	N/A

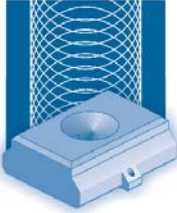
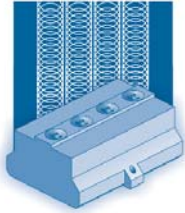



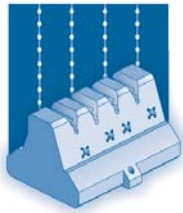


Product Comparison: Universal™ Spray Nozzles

	CF® Nozzles	Summit™ Nozzles	Continuous Signature® Nozzles	Intermittent Signature® Nozzles	Control Coat® Nozzles	SureWrap™ Nozzles
Nozzle						
Maximum Add-on Weight	30 GSM @ 150 m/min, 15 GSM @ 300 m/min	14 GSM @ 300 m/min, 10 GSM @ 400 m/min	14 GSM @ 300 m/min, 7 GSM @ 600 m/min	14 GSM @ 300 m/min, 7 GSM @ 600 m/min	6.6 GSM @ 300 m/min, 3.3 GSM @ 600 m/min	25 to 100 milligrams per strand per meter @ 600 m/min
Production Speed Capability	10 to 350 m/min (33 to 1148 ft/min)	10 to 400 m/min (33 to 1312 ft/min)	10 to 650 m/min (33 to 2132 ft/min)	10 to 650 m/min (33 to 2132 ft/min)	10 to 600 m/min (33 to 1968 ft/min)	100 to 600 m/min (330 to 1968 ft/min)
Adhesive Fiber Size	50 to 200 microns	50 to 100 microns	50 to 100 microns	50 to 100 microns	25 to 75 microns	N/A
Adhesive Viscosity (recommended)	4,000 to 8,000 cps	1,500 to 10,000 cps	1,000 to 3,000 cps	1,000 to 6,000 cps	1,000 to 5,000 cps	8,000 to 15,000 cps (10,000 cps recommended)
Operating Temperature	70° to 205° C (160° to 400° F)					
Adhesive Flow	10 to 250 grams per minute per nozzle	2.5 to 25 grams per minute per orifice	5 to 150 grams per minute per nozzle	10 to 100 grams per minute per nozzle	5 to 50 grams per minute per nozzle	2.5 to 25 grams per minute per orifice
Air Consumption	0.25 to 1 scfm per nozzle	0.50 to 1 scfm per nozzle	0.50 to 0.75 scfm per nozzle	0.50 to 2 scfm per nozzle	0.5 to 1.5 scfm per nozzle	0.07 to 0.21 scfm per strand
Air Pressure (typical)	0.3 to 2 bar (5 to 30 psi)	0.2 to 1 bar (3 to 15 psi)	0.3 to 1 bar (5 to 15 psi)	0.5 to 2 bar (7.5 to 30 psi)	0.5 to 2 bar (7 to 30 psi)	0.3 to 1 bar (5 to 15 psi)
Working Hydraulic Pressure	13.8 to 55.2 bar (200 to 800 psi)	13.8 to 55.2 bar (200 to 800 psi)	3.4 to 17 bar (50 to 250 psi) at nozzle	5 to 20 bar (74 to 294 psi) at nozzle	13.8 to 55.2 bar (200 to 800 psi)	13.8 to 55.2 bar (200 to 800 psi)
Maximum Hydraulic Pressure	89.6 bar (1300 psi)					



Product Comparison: Universal™ Spray Nozzles

	CF® Nozzles	Summit™ Nozzles	Continuous Signature® Nozzles	Intermittent Signature® Nozzles	Control Coat® Nozzles	SureWrap™ Nozzles
Nozzle						
Strengths/Application Requirements	High-strength bonding	High-strength coating	High-speed, continuous coating	High-speed, intermittent coating	High-speed intermittent, uniform coating	Elastic attachment
Intermittent Capability	★	★ ★	N/A	★ ★ ★	★ ★ ★	★ ★ ★
Bond Strength	★ ★ ★	★ ★ ★	★ ★	★ ★	★	★ ★ ★
Robust/Operating Range	★ ★ ★	★ ★	★ ★ ★	★ ★	★	★ ★ ★
Edge Control	★ ★	★ ★	★ ★	★ ★	★ ★ ★	N/A
Pattern Uniformity	★	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★
Line Speed	★	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★
Initial Investment	★ ★ ★	★ ★	★ ★	★ ★	★	★ ★

★ ★ ★ Best
 ★ ★ Better
 ★ Good
 N/A Not applicable or not intended to provide this capability

October 2008