Composites & PPG Dexmet® Engineered Materials for lightning strike protection

MicroGrid® metal foils for composite aircraft, wind turbine blades and structures

For over 60 years, aluminum has been the primary material in aircraft and aerospace construction. Today, the drive for greater efficiency has led manufacturers to adopt lightweight composite materials for components such as fuselages, wings, engine nacelles, flaps, wing tips, and rotary blades in helicopters and wind turbines. However, composites are poor conductors of electricity and energy dispersion. Without proper protection, composite structures are susceptible to severe damage when subjected to a lightning strike. Our expanded aluminum and copper *MICROGRID* metal foils provide an effective solution by dispersing lightning energy across the surface, protecting the underlying composite structure from damage. These materials are engineered for versatility, making them ideal for both original equipment manufacturing (OEM) and repair applications, helping ensure consistent protection throughout the lifecycle of the aircraft or structure.

MICROGRID metal foils technology

PPG Dexmet MICROGRID precision-expanded metal foils are the preferred choice for lightning strike protection in composite aircraft structures. As a trusted supplier to leading manufacturers, *PPG Dexmet* engineered materials guides the industry standard. Unlike traditional woven wire, *MICROGRID* metal foils offers significant benefits with its advanced single-unit structure that resists unraveling and eliminates loose strands—issues that complicate pre-preg processing and dry lay-up applications. Its uniform design ensures consistent conductivity across complex shapes and contours, while delivering a smooth surface finish. A key advantage of *MICROGRID* metal foils is the ability to precisely control weight, open area, and conductivity, enabling engineers to tailor protection to specific strike zones and reduce overall aircraft weight. Standard materials are capable of withstanding Zone 1A lightning strikes of up to 200,000 amps.

Common *MICROGRID* metal foil materials

Below are charts of the most typically produced materials for lightning strike protection in composite aircraft structures for Zones 1, 2 and 3. Over rivet lines, lightning strike testing has determined that weights greater than 400 g/m^2 are better at dissipating sparking from embedded rivets. In wind applications, the heavier configurations can be used to allow for repeated strikes. For these heavier materials, other alloys or metals, different thicknesses and pattern sizes please consult with our sales and engineering professionals for specific characteristics in regard to your particular application.

Aluminum material specifications				
Product code	2AL8-075F	4AL8-080	4AL8-080F	5AL10-080
Weight - LBS/SF (± 10%) **-g/m^2 (± 10%)**	0.013 66.0	0.016 78.12	0.016 78.12	0.028 136.7
Original metal thickness (± 10%)	0.002 inch 0.051 mm	0.004 inch 0.102 mm	0.004 inch 0.102 mm	0.005 inch 0.127 mm
LWD (± 5%)	0.075 inch 1.905 mm	0.080 inch 2.032 mm	0.080 inch 2.032 mm	0.080 inch 2.032 mm
Overall thickness **(± .001 inch / ± .025 mm)**	0.002 inch 0.051 mm	0.006 inch 0.152 mm	0.004 inch 0.102 mm	0.006 inch 0.152 mm
Open area (± 5%)	52%	71%	71%	60%
	Flattened	Leveled	Flattened	Leveled

Copper material specifications				
Product code	2CU4-100A	2CU6-100A	3CU7-125A	3CU7-100A
Weight - LBS/SF (± 10%) **-g/m^2 (± 10%)**	0.015 73.3	0.022 107.4	0.029 141.6	0.040 195.3
Original metal thickness (± 10%)	0.002 inch 0.051 mm	0.002 inch 0.051 mm	0.003 inch 0.076 mm	0.003 inch 0.076 mm
LWD (± 5%)	0.100 inch 2.54 mm	0.100 inch 2.54 mm	0.125 inch 3.175 mm	0.100 inch 2.54 mm
Overall thickness **(± .001 inch / ± .025 mm)**	0.004 inch 0.102 mm	0.005 inch 0.127 mm	0.005 inch 0.127 mm	0.005 inch 0.127 mm
Open area (± 5%)	84%	76%	79%	70%
	Annealed	Annealed	Annealed	Annealed

Typically produced materials for lightning strike protection are used in the following:

Aircraft uses

- Fuselage
- Wings
- Rudder
- Vertical Stabilizers
- Spoilers
- Ailerons
- Vanes
- Flaps
- Slats
- Engine Nacelles
- Belly Fairings
- Winglets

Additional uses

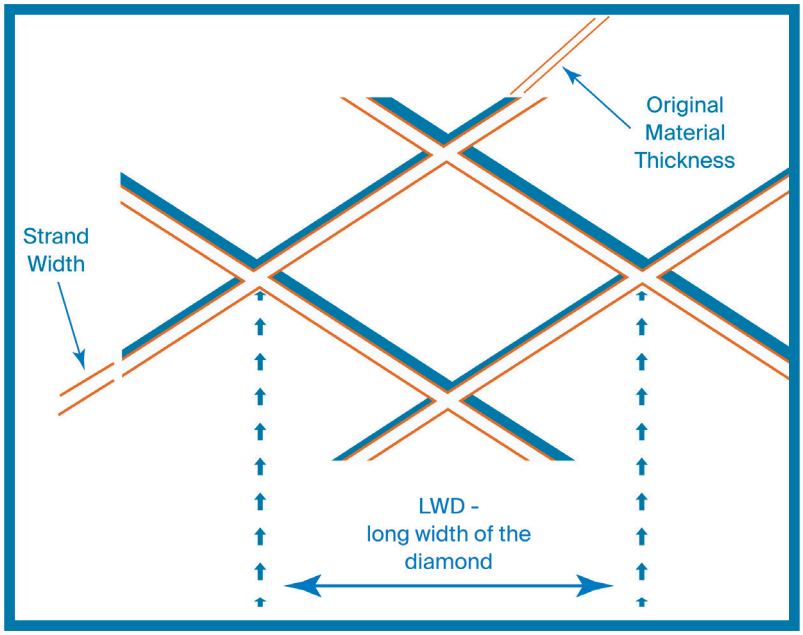
- Helicopter - Rotary Blades & Radar Antennae
- Wind Energy - Turbine Blades & Generator Nacelles
- EMI/RFI Shielding, Exposed Composites Structures

Flattened copper material specifications

Product code	2CU4-100FA	2CU6-100FA	3CU7-125FA	3CU7-100FA
Weight - LBS/SF (± 10%) **-g/m² (± 10%)**	0.015 73.3	0.022 107.4	0.029 141.6	0.040 195.3
Original metal thickness (± 10%)	0.002 inch 0.051 mm	0.002 inch 0.051 mm	0.003 inch 0.076 mm	0.003 inch 0.076 mm
LWD (± 5%)	0.100 inch 2.54 mm	0.100 inch 2.54 mm	0.125 inch 3.175 mm	0.100 inch 2.54 mm
Overall thickness **(± .001 inch / ± .025 mm)**	0.002 inch 0.051 mm	0.002 inch 0.051 mm	0.003 inch 0.076 mm	0.003 inch 0.076 mm
Open area (± 5%)	84%	76%	79%	70%
	Flattened / Annealed	Flattened / Annealed	Flattened / Annealed	Flattened / Annealed

Flattened copper material specifications

Product code	1.6EDCU12-100FA
Weight - LBS/SF (± 10%) **-g/m² (± 10%)**	0.036 175.0
Original metal thickness (± 10%)	0.002 inch 0.041 mm
LWD (± 5%)	0.100 inch 2.54 mm
Overall thickness **(± .001 inch / ± .025 mm)**	0.002 inch 0.045 mm
Open area (± 5%)	52%
	Flattened / Annealed

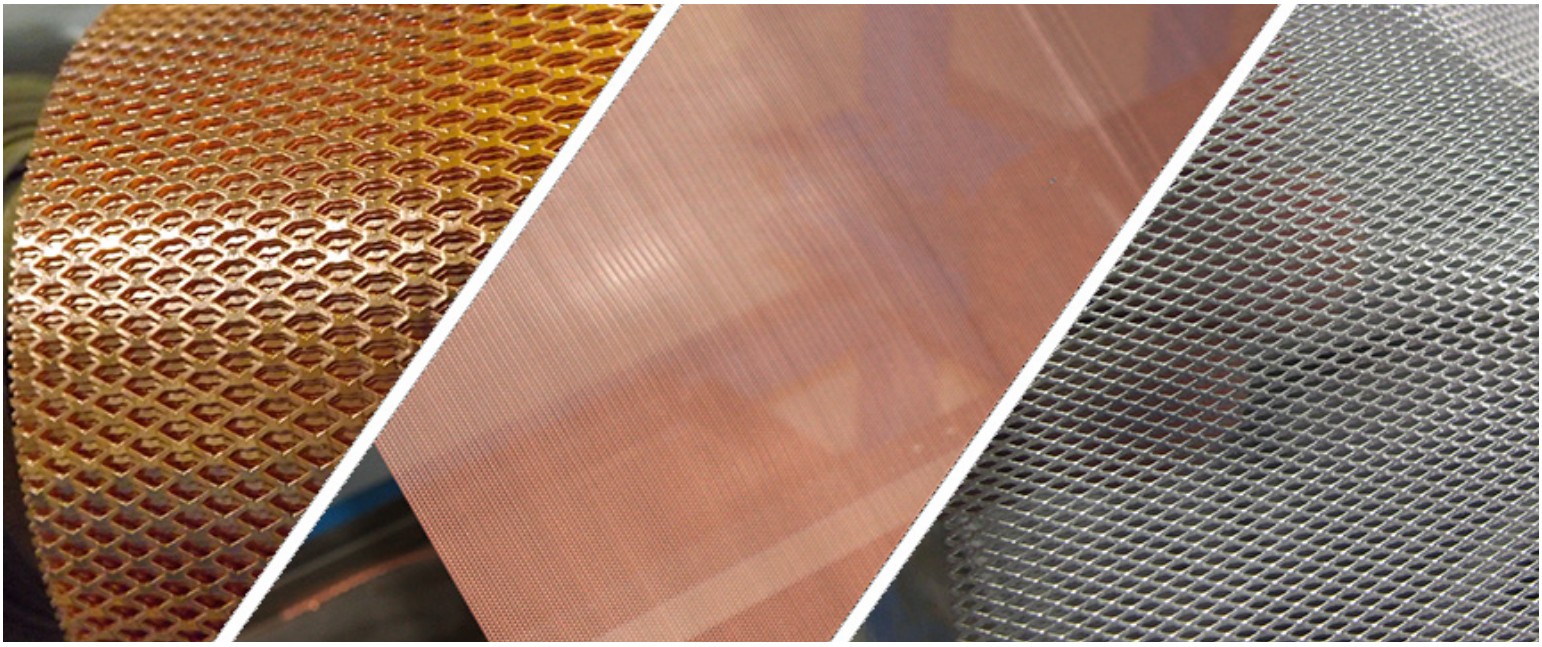


Illustrated view of expanded material

Lightning strike protection

MICROGRID metal foils for composite aircraft, wind turbine blades and structures

PPG Dexmet engineered materials is committed to delivering high-quality products tailored to meet precise customer specifications—on time and with reliability. With a long-standing legacy of excellence, we supply expanded foils and polymers of exceptional quality, backed by deep technical expertise and responsive customer service. Our dedication to continuous improvement and innovation has established *PPG Dexmet* engineered materials as a global leader in the production of expanded thin-gauge micro materials. *PPG Dexmet* engineered materials is dedicated to providing our customers with quality products manufactured to meet their exact requirements and delivered on time. Our goal is to achieve total customer satisfaction through our continuos improvement initiatives.



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Engineered Materials
22 Barnes Industrial Park Road
Wallingford, CT 06492, USA
Telephone: (203) 294-4440
www.ppg.com/aerospace

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