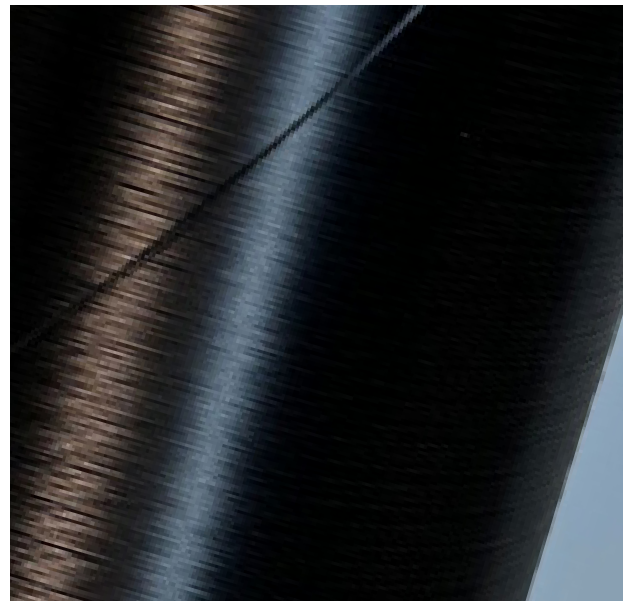


GALVORN

SPECIFICATIONS SHEET



GALVORN OVERVIEW

Galvorn has the conductivity of metals, while offering significant weight savings and orders of magnitude more strength and flexibility.

Galvorn was originally invented by Nobel laureates for high performance space applications, and DexMat has exponentially increased production capacity since its founding to make Galvorn accessible to critical applications on Earth.

HIGHLIGHTS

80%

LESS DENSE
THAN COPPER

50X

STRONGER
THAN COPPER

1000X

MORE FLEXIBLE
THAN COPPER

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GALVORN PROPERTIES

CONDUCTIVE

Nearly equivalent to copper

The electrical conductivity of Galvorn is nearly equivalent to copper on a per mass basis.

STRONGER

50x stronger than copper

Weight for weight, Galvorn is 50x stronger than copper. (And 15x stronger than steel.)

MORE THERMALLY CONDUCTIVE

17% more than copper

Galvorn has higher thermal conductivity than copper: 450 W/m-K versus copper at 385 W/m-K. This makes it better at dissipating heat.

LIGHTER

80% less dense than copper

Galvorn's density is 1.6 g/cm³. Copper's density is 9.0 g/cm³. Aluminum's density is 2.7 g/cm³.

MORE FLEXIBLE

1000x flex life of copper (and carbon fiber)

Galvorn's exceptional flex tolerance promises superior durability in the end-use application.

CORROSION-RESISTANT

No rusting, no pitting, even over years

The carbon-carbon bonds in Galvorn resist oxidation and chemical reactions under standard conditions, making it inherently stable.

STATE OF THE ART MATERIAL COMPARISONS*

Properties	Galvorn	Copper	Aluminum	Steel	Carbon Fiber	Aramid (Kevlar)	Dyneema
Strength, GPa	3	0.38	0.41	1	6.4	3	3.9
Density, g/cm ³	1.6	9.0	2.7	8	2.1	1.4	0.98
Conductivity, MS/m	10	58	33	3.4	0.1	Insulating	Insulating
Thermal Conductivity, W/m-K	450	385	237	50	200 - 1000	0.04	20
Specific Conductivity (Sm ² /kg)	6150	6300	12200	400	50	-	-
Young's Modulus, GPa	200	100	68	200	200 - 400	130	132
Tenacity (N/tex)	2.00	0.04	0.15	0.13	3	2.1	3.9

*Properties are based on tests performed on single filament fiber or solid metal wire.

GALVORN HS PROPERTIES

Galvorn HS ("High Strength") is a grade of Galvorn that is optimized for high strength applications, while also maintaining its conductivity and other high-performance properties.

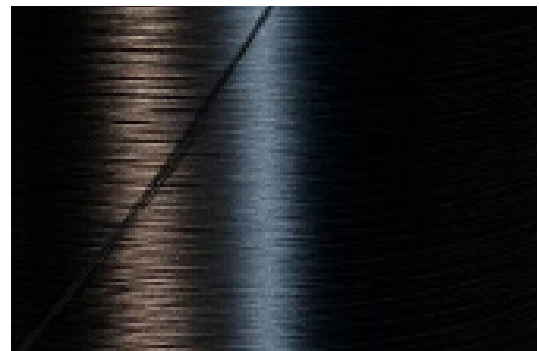
Galvorn Single Filament Fiber	
Linear Density, tex	0.6
Conductivity, MS/m	10
Resistance, Ω /m	200
Density, g/cm ³	1.6
Tensile Strength, GPa	3
Tenacity (N/tex)	2
Thermal Conductivity, W/m-K	450
Young's Modulus, GPa	200
Diameter, μ m	30
Available lengths, m	1 - 10,000



SINGLE FILAMENT FIBER

Galvorn single filament fiber exhibit the highest grade of properties.

Galvorn Fiber Tow	
Linear Density, tex	5 - 200
Conductivity, MS/m*	5 - 7
Resistance, Ω /m	1 - 40
Density, g/cm ³ *	1.3
Tensile Strength, GPa	1 - 2
Tenacity (N/tex)*	0.8 - 1.5
Thermal Conductivity, W/m-K*	200 - 300
Young's Modulus, GPa	40 - 150
Diameter, μ m*	15 - 30
Available lengths, m	1 - 10,000
Available number of filaments per tow	5 - 200



FIBER TOW

Galvorn fiber tow consisting of many individual fiber filaments.

* Properties for individual filaments in the tow
Note: Listed Galvorn properties were measured at 21 ± 2°C and 50 ± 10% relative humidity.

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GALVORN HS PROPERTIES

Galvorn Yarn	
Linear Density, tex	17 - 175
Conductivity, MS/m	3 - 5.5
Resistance, Ω/m	1.2 - 10
Density, g/cm ³	0.7 - 1.2
Tensile Strength, GPa	0.5 - 1.6
Tenacity (N/tex)	1.1 - 1.5
Thermal Conductivity, W/m-K	200 - 300
Young's Modulus, GPa	50 - 95
Diameter, μm	150 - 5000
Available lengths, m	1 - 10,000

Galvorn Fabric	
Fabric thickness, mm	0.1 - 0.6
Fabric weight, g/m ²	10 - 500
Sheet Resistance, Ω/sq	0.01 - 1.0
Available dimensions, m	Up to 0.4 m in length / width

*Note: Listed Galvorn properties were measured at 21 ± 2°C
and 50 ± 10% relative humidity.*



YARN

Galvorn fibers are twisted or braided into yarn to hold fibers together and increase diameter.



FABRIC

Galvorn yarns or fibers assembled into textile fabrics.

GALVORN HS PROPERTIES

Galvorn Film	
Linear Density, tex	0.27 - 900
Conductivity, MS/m	3 - 5
Resistance, Ω/m	0.3 - 1
Density, g/cm ³	1.5
Tensile Strength, GPa	0.7
Thermal Conductivity, W/m-K*	150
Width, cm	1 - 6
Thickness, μm	10 - 20
Available lengths, m	1 - 100

*Longitudinal

Note: Listed Galvorn properties were measured at 21 ± 2°C and 50 ± 10% relative humidity.



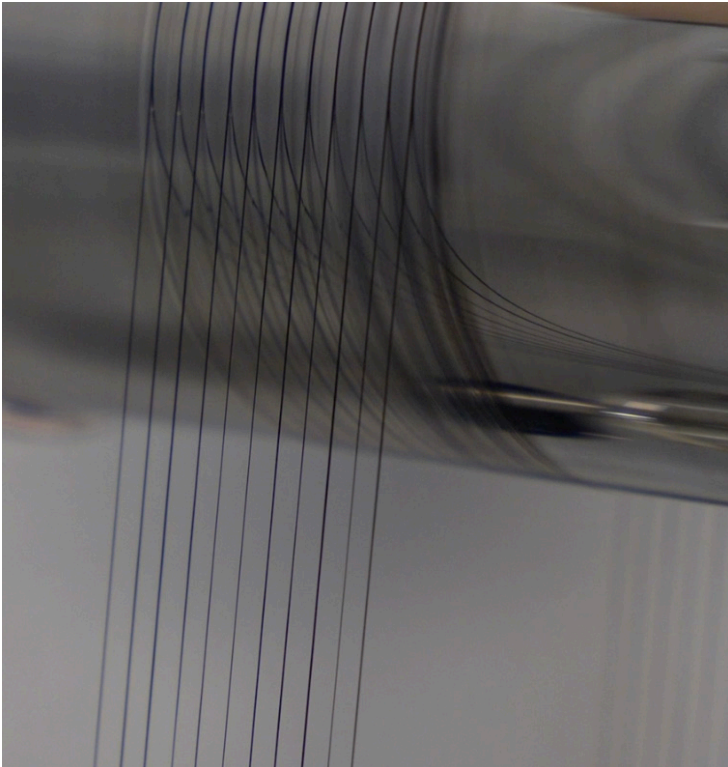
FILM

Flexible and conductive thin film made of Galvorn.

ADDITIONAL RESOURCES



VISIT:
dexmat.com/blog
dexmat.com/resource-center



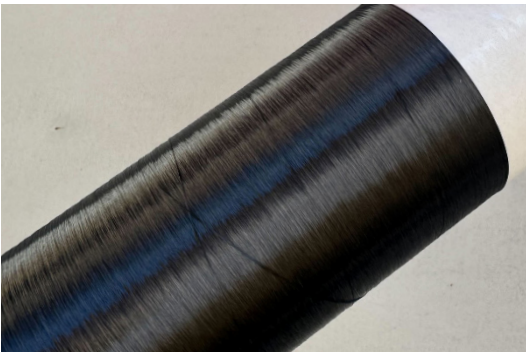
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GALVORN C PROPERTIES

Galvorn C (“Conductivity”) is a grade of Galvorn that we have optimized for conductivity and compatibility with standard textile manufacturing equipment. Consider this new conductive yarn if you are in need of a lightweight conductor but do not want the full strength of traditional Galvorn.

Galvorn C Fiber Tow	
Linear Density, tex	30.00
Conductivity, MS/m*	4.90
Resistance, Ω/m	8.00
Density, g/cm ³ *	1.30
Break Force, kg	1.80
Tensile Strength, GPa*	0.70
Tenacity (N/tex)	0.55
Young’s Modulus, GPa	20.00
Diameter, μm	38
Available lengths, m	1 - 10,000
Available number of filaments per tow	20 - 200

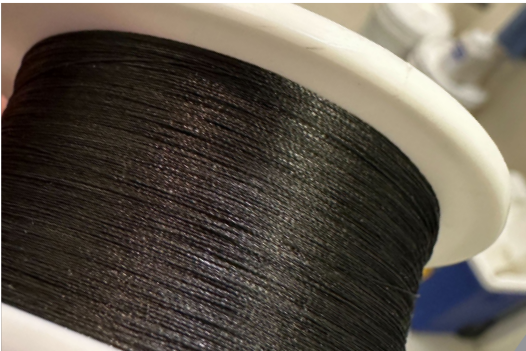
Galvorn C Yarn	
Linear Density, tex	90.00
Conductivity, MS/m	3.00
Resistance, Ω/m	2.80
Density, g/cm ³	0.80
Break Force, kg	6.00
Tensile Strength, GPa	0.53
Tenacity (N/tex)	0.65
Young’s Modulus, GPa	20.00
Diameter, μm	400
Available lengths, m	1 - 10,000



GALVORN C FIBER TOW

Galvorn C fiber tow consisting of many individual fiber filaments.

* Properties for individual filaments in the tow
Note: Listed Galvorn properties were measured at 21 ± 2°C and 50 ± 10% relative humidity.



GALVORN C YARN

Galvorn fibers are twisted or braided into yarn to hold fibers together and increase diameter.

GALVORN CAN DO THE WORK OF INCUMBENT MATERIALS WITH FAR LOWER EMISSIONS

It's time to re-think how materials get the job done. Galvorn's specific strength is higher than incumbents so you need less of it to do the same work. And because producing it is fundamentally more efficient, displacing these GHG-intense incumbents in structural applications has a massive impact. Likewise, though Galvorn has a lower specific conductivity than copper or aluminum, their displacement leads to lower emissions—even if you need more Galvorn to conduct the same amount of electricity.

WATCH: Materials at Work

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