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Our Products

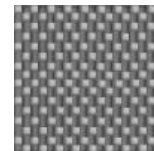
Carbon Fiber Fabric

GENERAL INFORMATION

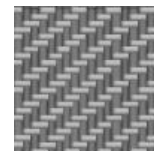
- Our carbon fiber cloth weights can range from 80gsm (oz) to 1330gsm (oz)
- Carbon cloth made with various fiber tow sizes and types such as 1K, 3K, 6K, 12K, 24K, 48K, 50K, Standard Modulus & High Modulus
- Fiber
 - Standard weave styles such as Plain, Twill, Basket, Harness Satin, Uni-Directional, Hybrid and Leno
 - Standard widths from 42"-60", however we have the capability to produce widths from 1"-80"
 - Yarn input includes carbon fibers and aramid fibers such as Kevlar, Twaron
 - Tapes available from 1"-12"

COMMON WEAVE STYLES

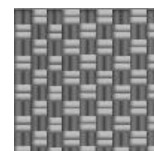
PLAIN WEAVE: The plain carbon fiber fabric weave is one of the most common weave styles we distribute as carbon fiber suppliers. The carbon warp yarns (yarn in the 0° direction) and carbon filling yarns (yarn in the 90° direction) are interlaced in a repeating one over and one under pattern, providing good fabric stability. Although this weave is generally more stable, it is not as pliable as the other typical weave styles.



TWILL WEAVE: The twill weave pattern is identified by parallel diagonal lines or ribs created by one or more carbon filling yarns floating over at least two carbon warp yarns. The pattern can be symmetrical such that 2 filling yarns float over 2 warp yarns in an over 2 under 2 sequence also known as a 2X2 Twill. Likewise, the 4X4 Twill would have 4 filling yarns floating over 4 warp yarns. This weave style is more pliable than the plain weave with better drapability and fabric stability than the harness satin weave styles.



BASKET WEAVE: The basket weave is a variation to the plain weave such that instead of alternating the yarns over one under one, there are two or more carbon warp and filling yarns interlaced over two under two. This weave style is stronger and more pliable than the plain weave but does not have the same fabric stability.



FOUR HARNESS SATIN WEAVE: The four harness satin weave, also known as the crowfoot, is easier to conform to rounded or contoured surfaces and is more pliable than

the plain weave. The weave pattern is a 3X1 interfacing where one carbon filling yarn floats over three carbon warp yarns and under one.

FIVE HARNESS SATIN WEAVE: The five harness satin weave is similar to the four harness satin in that it is pliable and conforms to complex and multifaceted contours. The weave pattern is a 4X1 interfacing where one carbon filling yarn floats over four carbon warp yarns and under one.

EIGHT HARNESS SATIN WEAVE: The eight harness satin weave is similar to the four harness satin in that it is pliable and conforms to complex and multifaceted contours. The weave pattern is a 7X1 interfacing where one carbon filling yarn floats over seven carbon warp yarns and under one.

LENO WEAVE: The leno weave, also known as gauze or doup weave has a low yarn count and open weave effect. This weave has two or more carbon warp threads crossed over each other and interlaced with one or more carbon filling yarns in a pattern that resembles a figure eight down the fabric length. It is very sheer and although it permits passage of both light and air through the fabric, it is durable with good dimensional stability. Unlike most open weave fabrics, the leno weave maintains yarn uniformity and there is few yarn slippage or distortion.

BONDED UNI-DIRECTIONAL WEAVE: The uni-directional weave, also commonly referred to as UNI, has directional strength in one direction only, normally the 0° direction. One way to accomplish a uni-directional weave is by using a fusible yarn that bonds when heat is applied to provide fabric stability. Common construction would consist of bonded filling yarns (90° direction) to carbon warp yarns (0° direction) for stability. This is referred to as a bonded uni-directional (BUD) weave. Bonded uni-directional woven material can be made in various weave styles such as plain or twill weave, however the most common is the plain weave.

QUASI UNI-DIRECTIONAL WEAVE: The quasi uni-directional weave mimics the uni-directional fabric construction such that there is more strength in the warp direction (0° direction) than the fill direction (90° direction). In the quasi uni-directional weave, there are a larger number of carbon yarns in one direction, with fewer or generally smaller sized yarns in the other direction. The pattern can contain 12K carbon warp tows and 3K carbon weft (fill) tows. Another pattern can contain both 12K carbon in the warp and fill, however there would be fewer yarns in the fill direction than the warp direction.

HYBRID TWILL WEAVE: The hybrid twill weave pattern is identified by parallel diagonal lines or ribs created by one or more aramid filling yarns floating over at least two carbon warp yarns. The pattern can be symmetrical such that 2 aramid filling yarns float over 2 carbon warp yarns in an over 2 under 2 sequence also known as a 2X2 Twill. Another variation is to alternate the tows in both warp and weft such that the pattern would have alternating carbon yarn and aramid yarn in both warp and fill directions.

PLAIN WEAVE BONDED DIRECTIONAL WEAVE: The plain weave bonded directional weave is a variation that combines both the plain weave and bonded uni-directional weave to provide stability in open weave styles. The pattern alternates a carbon warp and filling yarn with a fusible warp and filling yarn that bonds when heat is applied. This weave pattern is similar to the leno weave such that it is very sheer and although it permits passage of both light and air through the fabric, it is durable with good dimensional stability. Unlike most open weave fabrics, the plain weave bonded directional weave maintains yarn uniformity with few yarn slippage or distortion.

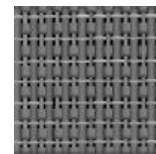
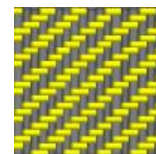
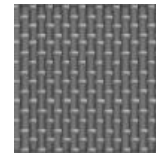
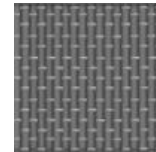
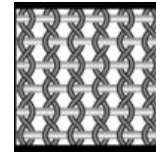
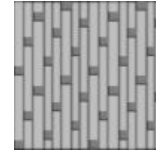
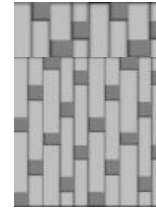
TERMS & DEFINITIONS

Abrasion Mark - An area where the fabric has been damaged by friction

Baggy Cloth - Excess fabric forming ridges or bulges which prevent the fabric from laying flat

Bowing/Skewing - A condition where the warp and fill yarns are not at right angles to each other

Broken Leno - A place where the leno threads have broken out and where fabric construction and cohesion is maintained by use of an adhesive or glue



Broken Tracer - A warp or fill tracer yarn missing from a portion of fabric length or width

Broken Yarn - A single warp or fill yarn that is cut, severed or broken

Bump Up Mark - An area of increased pick density, caused by fabric slipping back on the loom

Crease/Wrinkle - A break or line in a fabric generally caused by a sharp fold

Cut - Adjacent yarns which have been cut or broken

Fabric Batch - Fabric woven from one warp loom setup with continuous run (not including breaks or lunch)

Fabric Splice - A portion of the fabric which has been cut and rejoined

Fiber - A single homogenous strand of material

Filamented End - A warp end or 0° yarn that has filamented for a portion of the fabric

Filamented Pick - A fill yarn that has filamented for either part or the full width of the fabric

Fill - Yarn laid parallel to the width of the fabric during weaving and oriented at right angles to the warp yarn

Float - A place in the fabric where a warp or filling yarn extends unbound over the yarns with which it should be interlaced

FOD - Foreign material or debris

Fuzz Ball - Loose or frayed fibers that have formed into a ball and have been woven into the fabric

Hang Pick - A pick caught on a warp yarn knot for a short distance, producing a triangular shaped hole in the fabric

Kink - A place in the fabric where a short length of yarn has doubled back on itself to form a loop in the yarn

Loose Pick (Loose Filling Yarn) - A single filling yarn which is not flush with the surrounding fabric usually caused by insufficient tension

Mispick - A filling yarn not properly interlaced, causing a break in the weave pattern

Pulled - In Filling - An extra filling yarn dragged into the weave with the regular filling yarn and extending across a portion of the fabric

Short Pick - A filling yarn missing from a portion of the width of the fabric

Sizing - A polymeric coating applied to yarns to improve handling characteristics

Skewing/Bowing - A condition where the warp and fill yarns are not at right angles to each other.

Slub - An abruptly thickened place in the yarn or fabric several times the diameter of the yarn and 1/8" or greater in length

Smash - A place in the fabric where a number of warp and filling yarns have been broken, usually characterized by many broken warp ends and floating picks

Tear - A torn section of fabric not including the selvage

Tear Drop - A fabric condition characterized by short elliptical deviations of one or more adjoining picks

Tight End - A single warp yarn woven under excessive tension

Tow Tow - or fiber tow refers to a continuous bundle of fibers; interchangeable with yarn

Warp - Yarn laid parallel to the length of the fabric during weaving and oriented at right angles to the fill yarn

Weave Separation - An opening between yarns due to improper yarn alignment

Wrinkle/Crease - A break or line in a fabric generally caused by a sharp fold

Yarn - Generic term for a continuous bundle of fibers; Also known as a tow

Yarn Lot - A quantity of material formed during a continuous unit of production having the same process and uniform characteristics throughout

Yarn Splice - A yarn which has been severed or broken and subsequently rejoined by intertwining, interweaving or knotting two ends

Fabric Data Sheet sample

SAM-PLC FABRIC DATA SHEET



FABRIC DATA SHEET

PART NUMBER:	ECF226A2-199-50
FABRIC DESCRIPTION:	199GSM 2X2TW A-38 3K 50IN
WEAVE STYLE:	2X2 TWILL WEAVE

SPECIFIED TOLERANCE LEVELS:		MIN	NOM	MAX
FABRIC AREAL WEIGHT:	(gsm)	190	199	208
	(osy)	5.61	5.87	6.14
FABRIC WIDTH:	(mm)	1270	1270	1280
	(inches)	50	50	50.39
FABRIC THICKNESS:	(mm)	REFERENCE DATA ONLY		
	(inches)	REFERENCE DATA ONLY		
YARN COUNT ENDS:	(per10cm)	48.00	50.50	53.00
	(perinch)	12.19	12.83	13.46
YARN COUNT PICKS:	(per10cm)	48.00	50.50	53.00
	(perinch)	12.19	12.83	13.46
WARP YARN DESCRIPTION:	FIBER RM #	RM007		
	WARP FIBER	A-38 3K		
	MODULUS	STANDARD MODULUS 3K CARBON		
TRACER YARN DESCRIPTION:	TRACER RM #	N/A		
	TRACER TYPE	N/A		
WARP TRACER SPACING:	(mm)	-	-	-
	(inches)	-	-	-
FILL YARN DESCRIPTION:	FIBER RM #	RM007		
	WEFT FIBER	A-38 3K		
	MODULUS	STANDARD MODULUS 3K CARBON		
TRACER YARN DESCRIPTION:	TRACER RM #	N/A		
	TRACER TYPE	N/A		
WEFT TRACER SPACING:	(mm)	-	-	-
	(inches)	-	-	-
LENO YARN DESCRIPTION:	LENO RM#	004		
	LENO TYPE	STANDARD MODULUS 3K CARBON		
DETAILS	DESCRIPTION	DOUBLE LOCK LENO EACH SELVAGE		
	FABRIC CONSTRUCTION	FOR WIDTHS 24IN OR LESS		
MASS (Fabric Areal Weight)	FABRIC WIDTH	METHOD		
	YARN COUNT	002		
FABRIC THICKNESS	BOW (Skew)	003		
	ROLL FIRMNESS	004		
BOW (Skew)		ETM005		
		ETM006		
ROLL FIRMNESS		ETM007/ETM008		
		ET009		

REFERENCE ONLY- UNCONTROLLED DOCUMENT



Part Number Key - [Click Here for PDF version](#)

Commercial 3K 2X2 Twill

199gsm 5.9oz

12.5X12.5 yarns per inch

[FABRIC DATA SHEET](#)

[MSDS SHEET](#)

Commercial 3K 2X2 Twill

203gsm 6.0oz

12.9X12.9 yarns per inch

[FABRIC DATA SHEET](#)

[MSDS SHEET](#)

Commercial 3K 2X2 Twill

220gsm 6.5oz

13.9X13.9 yarns per inch

[FABRIC DATA SHEET](#)

[MSDS SHEET](#)

Commercial 3K 2X2 Twill

245gsm 7.2oz

15.7X15.7 yarns per inch

[FABRIC DATA SHEET](#)

[MSDS SHEET](#)

Commercial 3K Plain

199gsm 5.9oz

12.57X12.5 yarns per inch

[FABRIC DATA SHEET](#)

[MSDS SHEET](#)

Commercial 3K Plain

203gsm 6.0oz
12.9X12.9 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 3K Plain

210gsm 6.2oz
13.5X13.5 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 3K Plain

220gsm 6.5oz
13.97X13.9 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 12K 2X2 Twill

370gsm 10.9oz
5.9X5.9 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 12K 2X2 Twill

670gsm 19.8oz
10.8X10.8 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 3K/Aramid Yellow Hybrid

194gsm 5.7oz
13.0X14.0 yarns per inch
FABRIC DATA SHEET
MSDS SHEET

Commercial 3K/Aramid Blue Hybrid

194gsm 5.7oz
13.0X14.0 yarns per inch
FABRIC DATA SHEET
MSDS SHEET