3DS
SHAPING THE FUTURE

Advanced Fibre Structural Reinforcements From M Wright & Sons

Scaffold Weave UD tapes from the 3DS division of M Wright & Sons are high weight, multi layered, minimum crimp reinforcements with an inbuilt resistance to delamination of the final composite part. Employing the principles of dead weaving produces a stable structure with a high density of low crimp UD reinforcing fibres.

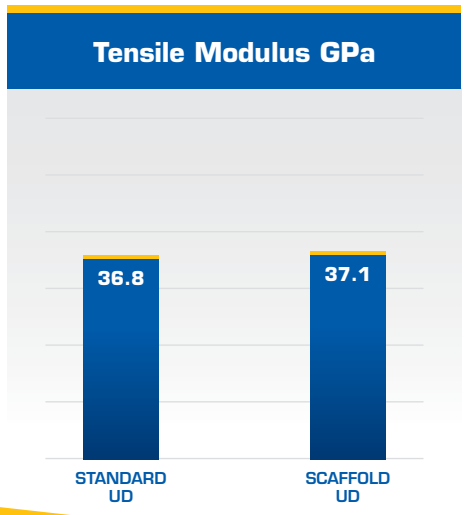
Traditional UD tapes tend to be warp biased, bi axial woven narrow fabrics typically in the lower weight range of 150 – 600 g/m².

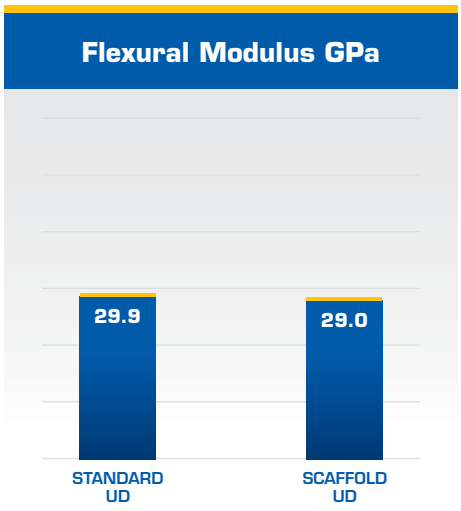
The majority of standard UD product offered is woven. The use of such tapes often requires multiple layer lamination in order to achieve a component weight that gives the required structural properties. However, multi layering of light weight UD tapes gives no inherent interlaminar reinforcement.

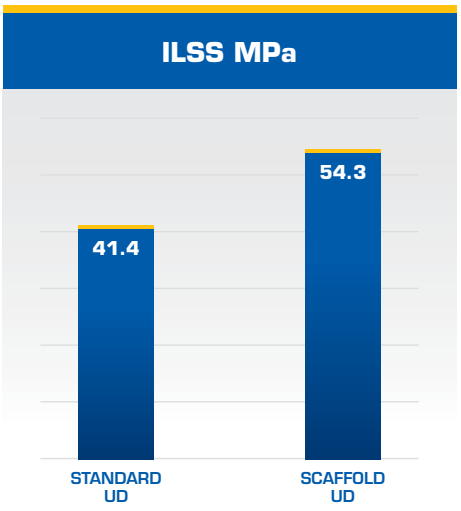
Our challenge was to design a reinforcement fabric that addresses the shortcomings of lighter weight standard woven UD tapes without compromising structural performance.

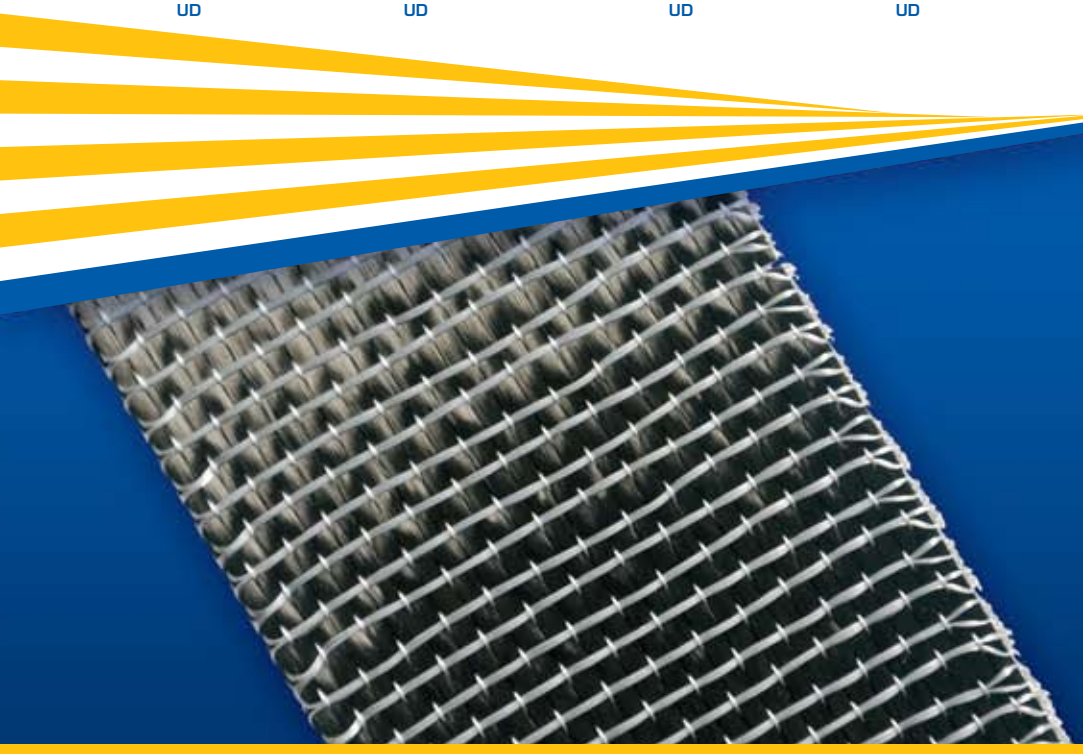
'Scaffold weave' UD tapes from M Wright & Sons offer a heavier weight multi layered construction. The 'dead woven' structure ensures crimp free UD reinforcement fibre and inherent interlaminar weft direction reinforcement.

The graphs illustrate how the 'scaffold weave' construction of standard E glass gives equivalent tensile and flexural modulus when compared to a standard woven UD tape, but significantly offers a 31% increase in InterLaminar Shear Strength. The photographs of ILSS test plaques show significantly reduced damage on 'scaffold weave' over standard UD construction.

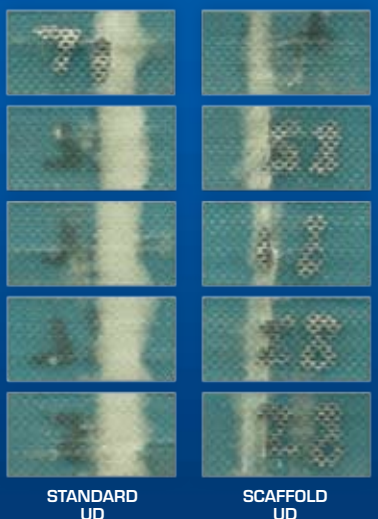








ILSS TEST PLAQUES



www.3dscarbon.com

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Scaffold Weave Key Features

- UD fibres packaged by way of a non reinforcing scaffold weave
- Warp yarns are 'dead woven' to give minimal crimp (typically less than 0.1%) of UD reinforcement fibres
- Scaffold weft fibres create inbuilt interlaminar reinforcement
- Heavy weight tape capability through multi layering of UD fibres aiding weave stability
- High density of UD fibres

Scaffold Weave Properties

	Properties	Glass	Carbon
FABRIC	Fabric Quality Ref	CD36	CD30
	Fabric Weight G/m²	1200	1400
	Reinforcement Fibres	600 Tex E-Glass	12K HS
	Scaffold Fibres	68 Tex E-Glass	68 Tex E-Glass
	Fabric Composition	100% Glass	87% Carbon / 13% Glass
COMPOSITE	Tensile Strength (MPa)	729	1230
	Tensile Modulus (GPa)	37.1	94.2
	Flexural Strength (MPa)	892	908
	Flexural Modulus (GPa)	29.0	50.7
	ILSS (MPa)	54.3	56.3

Composite testing by UKAS accredited laboratory

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