



Sting<sup>plus</sup> is part of Camira's Second Nature collection of environmental products. The three Second Nature product categories comprise fabrics which are recycled, renewable and compostable, or climate neutral.

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Sting<sup>plus</sup> - environmental fabric made from nettles



## • the concept

Sting<sup>plus</sup> is the result of four years' research and development to make a sustainable fabric from nettles! Camira have led a successful Defra supported project in conjunction with academic partner De Montfort University to use the common stinging nettle as the raw material fibre input for a new environmental textile for contract upholstery applications.

The project has involved research into nettle cultivation, harvesting and fibre extraction; fibre processing, blending, weaving and dyeing; technical performance evaluation and life cycle assessment.



## • nettle plant & its uses

What's often thought of as a persistent weed with a painful sting is in fact an incredibly beautiful plant with a myriad of uses. Nettles have all kinds of medicinal and healing properties; they can be used in soaps and shampoo; they're used as flavourings in wine, tea, soup and beer; and their stems contain long, strong and soft fibres with high performance technical characteristics making them ideal for use in contract furnishing fabrics. There are actually hundreds of different nettle species, the most well known and easily recognisable of which is the common stinging nettle or "urtica dioica".

## • the sting project

Sting is not just the name of a fabric, it's the name of a four year LINK project through the Sustainable Technologies Initiative with funding from UK government department Defra (Department for Environment, Food and Rural Affairs). Linking industry and academia, targeting a mix of commercial and scientific objectives, the project was run by Camira together with De Montfort University.

Additional research and industrial partners included the Central Science Laboratory in York, Lindridge Hall Farm in Leicestershire and Springdale Crop Synergies in Driffield. The Sting name was conveniently and creatively coined to stand for "Sustainable Technology in Nettle Growing".

## • the agriculture

Nettles are a perennial crop which grow rapidly from springtime onwards, reaching up to 8 feet by the time they're harvested. They grow easily - without the need for pesticides or herbicides - on land which is often unsuitable for other crops, such as floodplains and even on brownfield sites. In doing so they create their very own diverse eco-system by providing a natural habitat for rabbits, birds, butterflies, insects, moths, even frogs and toads. They're harvested in late summer and left to dry out on the field while their leaves naturally decompose and provide nutrients for the following year's crop. The nettle stems are then baled and taken away for mechanical decortication, whereby the fibre is extracted from the outer part of the stem and the woody remnant used for animal bedding.



Nettle cuttings prepared for planting



Nettle harvesting



Bio-diversity

## • fibre and fabric

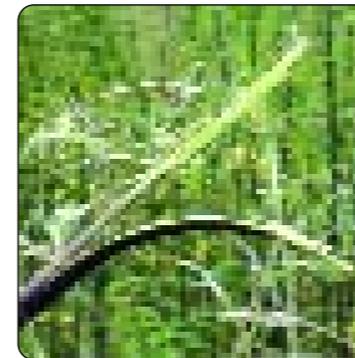
Nettles have evolved from nature to provide their very own natural protection – their powerful sting stops hungry animals eating them, while the fibres in the stem give great strength through flexibility and bend rather than break in the wind. In common with other bast plants the fibres in nettles are located between the outer bark (epidermis) and the central woody core, arranged in bundles held together with pectins. Not only are they particularly strong and elastic making them ideal as a textile fibre, but they have in-built fire retardant properties. When blended with wool, they create an unrivalled fire retardant fabric which outperforms blends of wool and FR viscose and 100% wool with a Zirpro flammability treatment. After millions of years of self protection nettles are now offering protection to us!

The fabric aesthetic is designed to exhibit its natural rustic charm in a fancy hopsack with a soft, tasteful colour palette inspired by the English countryside and hedgerow. Imagine dandelion clocks billowing on the wind, acid green acorns behind russet autumn leaves, granite stone walls, heavy laden elderberry and bilberry bushes – you get the picture...

## • environmental attributes

Nature's most well known environmental textile, pure new wool, provides the perfect accompaniment to soft, fine and sustainable fibre produced by the nettle plant. The two fibre types are blended together and spun locally near the Camira manufacturing facility in Huddersfield, UK. The fabric is then woven on energy efficient high speed dobby looms powered by green electricity from renewable sources. Yarn cones are re-used and any selvedge waste and yarn remnants go into recycling streams for use in mattress fillings and insulation materials.

Finally the fabric is piece-dyed in low liquor dye vessels using non-metallic dyestuffs and a natural water supply flowing directly from the Pennine hills. The tenter machine is equipped with a Radscan heat exchanger which captures heat for use in warm water scouring. Naturally inspired using locally grown materials and locally manufactured, make Sting<sup>plus</sup> Camira's most sustainable fabric ever.



Strength through flexibility - nettle fibres



Mature nettle field



Finished product