



CIRCULAR CENTRE + STSC Product Stewardship Scheme for Stretch Clothing + Smart Tech solutions

- DESIGN OUT WASTE + POLLUTION
- KEEP PRODUCTS + MATERIALS IN USE
- REGENERATIVE NATURAL SYSTEMS

We aim to do good, not just less bad
and help design out waste and pollution

*To paraphrase William McDonough, [Cradle to Cradle](#)

CIRCULAR DESIGN SYSTEMS.



The *Circular Centre* is a social enterprise and start-up based in Sydney and the world's first fully circular design system for both circular textiles and textile waste. Our existing circular services *replace*, repair, reuse, redesign and repurpose textiles - both new plus “unwearables and unusables”.

This presentation is about the “replace” component and how we integrate STSC with the [Circular Textile Waste Service \(CTWS\)](#) offered via a *Circular Textile Precinct*. STSC developed **CircStretch** to replace all existing garments that use plastic textiles with our revolutionary, safer stretch textile that utilised smart tech to enable clothing can be recovered, repaired, reused and ultimately composted to become nutrients for a continuous cycle, using seamless embedded smart thread.

STSC. Sustainable Textile Supply Chain is part of the Circular Centre. STSC wholesales sustainable textiles with over 500+ in our collection. The Circular Centre offers a unique circular textile waste system to disability and social enterprises to implement and operate as a *Circular Textile Precinct* linking to our circular systems for textile waste management.

Our goal was to remove all plastic from garments, and so we set out to develop textiles that will solve the problem of plastic pollution. Now with *CircStretch* designers can proudly offer true circular textiles for garments that require stretch. This newly developed textile replaces fabrics that cause microplastics making garments safe, non-toxic and home compostable.

Until now the only suitable stretch textiles are made using synthetic fibres that are known carcinogens and hormone disruptors that take hundreds of years to breakdown, even if only worn once. All plastic textiles, whether recycled or virgin, cause microplastic pollution during manufacturing, when washing plus in breaking down, therefore the *CircStretch* solution is to remove the harmful plastic all-together. **The circular solution for CircStretch is able to replicated worldwide.**

CIRCULAR DESIGN SERVICES

1. MANUFACTURE + WHOLESALE CIRCULAR TEXTILES VIA **STSC**.
2. SMART THREAD TRACEABLE advanced e-textiles with Adetex RFiD Threads
3. **CIRCULAR TEXTILE WASTE SERVICE**. Take-Back system to **Recover + Repair + Resell + Compost**
4. **HOME COMPOSTABLE** plus testing for accelerated commercial composting.
5. **Services Design**. Circular Textile Waste Service. **Recover + Repair + Resell + compost**
6. **Circular Design Systems**. Consulting Services



Product Stewardship Scheme for Stretch Clothing

CircStretch Bio-textile + Smart Tech Innovation

Giving a solution to the end-of-life cycle for knit garments. Garments made with CircStretch are long-lasting, repairable and reusable plus quickly home compost in microbiologically active soil leaving behind zero toxic plastic microfibres.

The bulk of the textile blends are made with premium certified wood-based cellulosic fibers and cotton. These base yarns promote garment longevity and the fibres can biodegrade in microbiologically active home compost in approximately 8-12 weeks.

The ROICA V550 yarn is fine & transparent. The small % is expected to biodegrade in microbiologically active home compost in approximately 1-2 years.



CIRCULAR PRODUCT DESIGN

- *CircStretch* is a collection of premium knit textiles developed and manufactured by STSC. Sustainable Textile Supply Chain. STSC is based in Sydney with mills in China and India.
- ***CircStretch knit*** collection is for activewear, swimwear, underwear, socks, uniforms, apparel, socks etc.
- *CircStretch* is a revolutionary non-toxic bio-stretch textile that causes zero plastic pollution & is safely home compostable.
- STSC have blended natural fibres with a cutting-edge new stretch yarn *ROICA V550* which is the world's first **Cradle to Cradle® Gold Standard certified** stretch yarn plus holds the **Hohenstein Institute Certification** showing it is non-toxic as it breaks down.
- 65 to 98% of *CircStretch* is made from the highest quality sustainable natural cellulosic fibres like Lenzing's CarbonNeutral® TENCEL™ Modal lyocell and ECOVERO™ viscose.
- And GOTS organic cotton or GRS certified recycled cotton.
- The revolutionary *ROICA V550* stretch component requires only 2-15% which will take approximately 1-2 years to break down in a microbiologically active home compost as opposed to all other products taking decades all the while causing plastic pollution.

NON-TOXIC HOME COMPOSTABLE
Cradle to Cradle Certified®
STRETCH TEXTILES



The Premium Stretch Fiber for
the Modern Wardrobe



PRODUCT OVERVIEW

- STSC wholesale bulk 1000+kg MOQs
- 100+kg MOQs via a collaborative order with [STSC CLUB](#)
- Designers can create their own mini-groups to place 100+kg orders by joining the [STSC Club Facebook Group](#)

See below for Order Process

- Knits include single jersey, rib knits, pique and interlock.
- We use premium innovative natural yarns TENCEL™ Modal, ECOVERO™, GOTS organic cotton, GRS Recycled cotton for the bulk yarns blending with ROICA™ V5500.
- Dyed with non-toxic **Cradle to Cradle®** or **Bluesign®** dyes
- eco trims include natural rubber and GOTS organic cotton garment elastic plus TENCEL™ sewing thread.



new 100% compostable
stretch jersey fabrics

**we have replaced
toxic plastic fibres**

The world's first
Cradle to Cradle®
Certified™
premium stretch
yarn blended with
natural fibres
BIRLA™ Modal,
EcoVero™ & GOTS
Organic Cotton



CERTIFIED
cradle to cradle

SUSTAINABLETEXTILES.CLUB

CIRCULAR DESIGN

To ensure that garments made with CircStretch are completely safe and reach the highest non-toxic benchmarks in the industry we have set our own circular standards for dyes, thread and trims.

This will ensure all garments are capable of being safely home composted plus enable us to trial commercial composting system to try reach the ISO/ASO standards. We are currently seeking support to test the capability to commercially compost end of cycle garments in specialised accelerated techniques within 6 months.

To do this we only dye our textiles with [Cradle to Cradle Certified®](#) or [BlueSign®](#) certified dyes. We can also manage testing and bulk dyeing for pure plant based dyes in India.

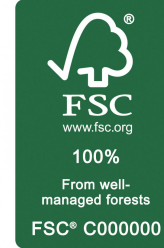
Digital printing dyes are AZO Free and will be compost tested.

THREAD, ELASTIC AND TRIMS.

We strongly suggest customers to use TENCEL™ lyocell sewing thread, elastic (eg our organic cotton and natural rubber) plus trims; buttons, rPET or eco zippers and embellishments are considered through circular design principles to be easily removed eg by our Circular Textile Waste Service teams plus re-enter a circular stream.



The independent
industry
textile
standard



The Premium Stretch Fiber for
the Modern Wardrobe





<https://www.facebook.com/watch/?v=2318403161580335>

CircStretch + Circular Textile Waste Service

MANUFACTURE + WHOLESALE CIRCULAR TEXTILES VIA *STSC*.

CIRCULAR TEXTILES + SMART THREAD TRACEABLE + COMPOSTABLE

Our holistic circular design system creates an industry benchmark offering leading garment manufacturers the ability to produce collections using a holistic system that is fully circular, non-toxic, zero-waste plus traceable, reusable, repairable and ultimately it is safely returned to soil in microbiologically active home compost.

The Circular Centre has partnered with ADETEX GROUP Advanced E-Textiles an international award-winning smart thread solution provider that enables us to work with customers to embed the thread at manufacturing stage. Their RFiD Thread won the [Global Change Award in 2017](#) by H&M Foundation in collaboration with Accenture and KTH Royal Institute of Technology Stockholm.

Our bespoke smart thread system offers advanced e-textiles using RFiD THREADS accessing supply chain information instantly from production to circular waste systems. Customers can choose to align with existing commercial systems for traceability and supply chain management plus marketing and customer engagement. The CTWS gains access at the resource recovery stage to link waste management, circular design plus data capture and carbon emission mitigation.



Circular Centre offers the smart tech solution to all manufacturers worldwide for any textile. We support the recycling of synthetic fibres only if the recycled yarn is used for products that will not be regularly washed in a washing machine.

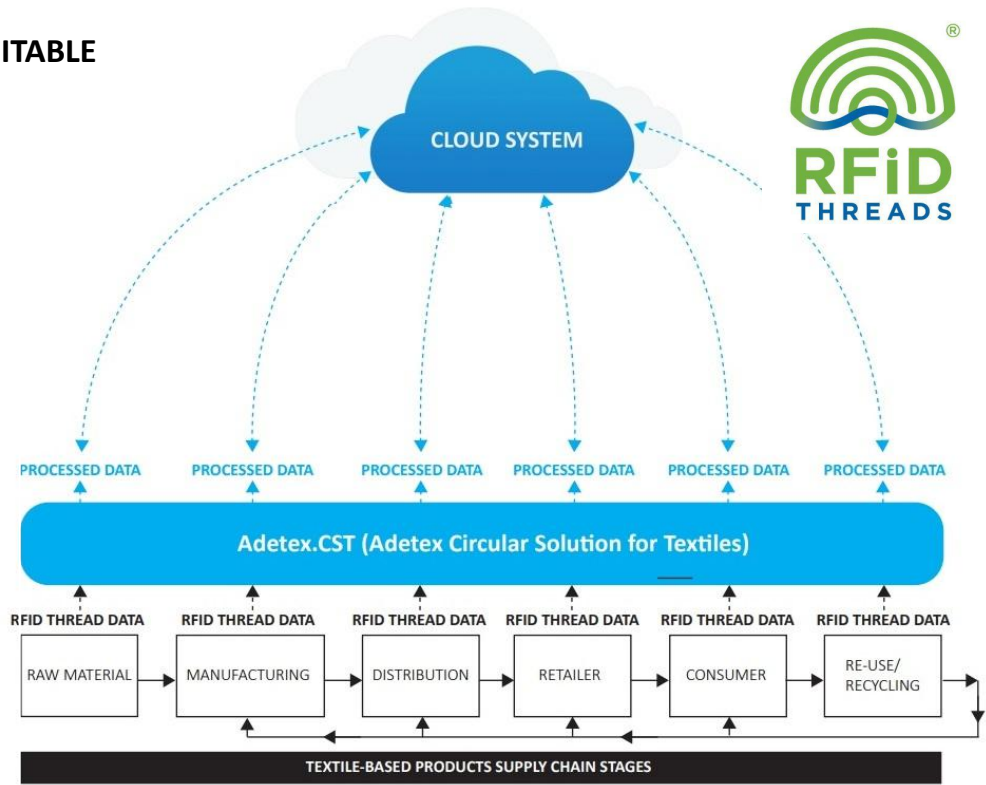
INCREASED PRODUCTIVITY, MORE RESPONSIBLE, MORE PROFITABLE

The embedded **smart thread** allows us to offer a costed Take-back systems to loop back into the **Circular Textile Waste Service (CTWS)** and monitor reuse, repair, resell and hopefully commercially compost.

The smart thread fast-tracks the resource recovering processing, allows us to determine the original client and send invoices for the cost of processing their “waste” according to the garment’s circular stream plus combines it with a human centered workforce and reports on capture data for LCA & carbon mitigation.

The smart thread is embedded then works holistically throughout the garment’s lifecycle. The Circular Centre will utilise the smart thread at the resource recovery-phase for various purposes including valorising materials, data collection, next-life, repair and re-sale, recycling, clothes renting. The time saving factor is enormous and will highly impact the “end of life” costs and savings.

It allows staff minutes to identify a garment instantaneously & record within batches of thousands of garments together and re-direct through circular streams accordingly. IT solutions provides services to customers according to their individual requirements. The Omni channel system includes: streamlining production, supply chain management, warehousing, distribution, retail inventory management, customer experience, Product authenticity.

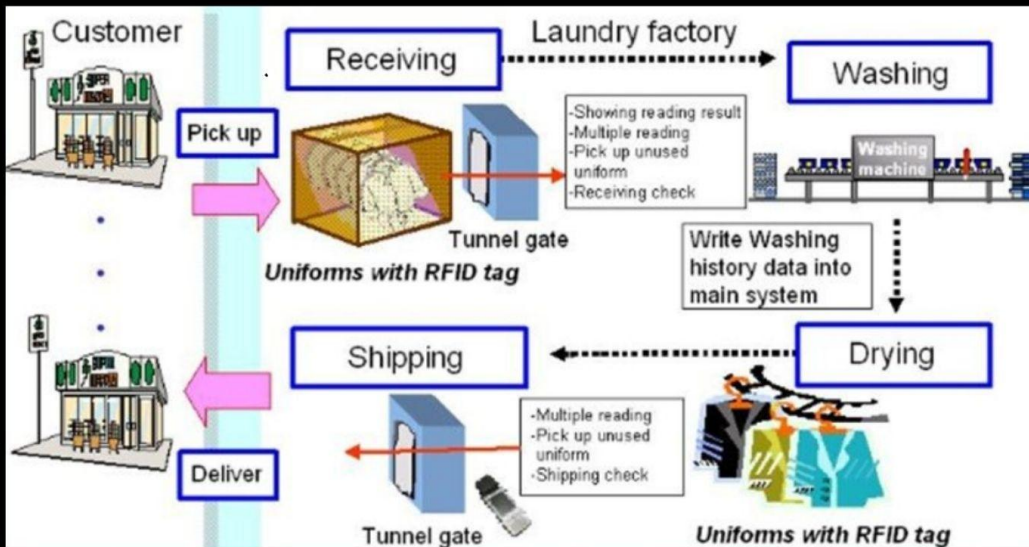
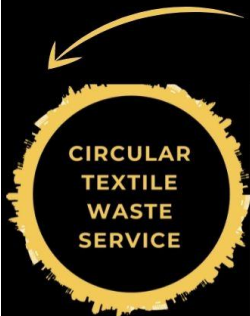


ACCELERATED COMMERCIAL COMPOST TRIAL.

The Circular Centre is working with Associate Professor Oliver Knox of University of New England to conduct an **accelerated commercial compost trial** to breakdown garments that meet ISO/ASO standards.

We currently seek **AUD\$17,000** to conduct the **6 months testing**.

SMART THREAD INTEGRATION



WASTE IS CALCULATED FOR DATA + MITIGATE EMISSIONS

**26+ CIRCULAR
STREAMS**



WWW.CIRCULARCENTRE.COM.AU

Research + Biodegradability

STSC works closely with Lenzing to source our yarn and market their products. Two recent announcements by Lenzing include research revealing experiments on Lenzing's fibre biodegradability plus launch of *CarbonNeutral® fibers*.

LENZING™

 **Tencel™**
Feels so right

 **LENZING Modal®**

 **LENZING™ EcoVero™**

World-renowned marine research institute confirms biodegradability of

LENZING™ fibers. The results of these experiments are striking: while wood-based cellulosic fibers fully biodegraded within 30 days, the fossil-based fibers tested were practically unchanged after more than 200 days. [Read the full Report from Lenzing.](#)

"Results of experiments conducted by the University of California's prestigious Scripps Institution of Oceanography in San Diego provide further scientific proof that LENZING™ fibers offer an effective substitute to synthetic fibers that are part of the pressing problem of plastic pollution in our oceans.

The results of these experiments are striking: while wood-based cellulosic fibers fully biodegraded within 30 days, the fossil-based fibers tested were practically unchanged after more than 200 days."


Innovative by nature

Press release

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Date October 27, 2021

World-renowned marine research institute confirms biodegradability of LENZING™ fibers

Sub.: Results of experiments conducted by the University of California's prestigious Scripps Institution of Oceanography in San Diego provide further scientific proof that LENZING™ fibers offer an effective substitute to synthetic fibers that are part of the pressing problem of plastic pollution in our oceans.

Lenzing/San Diego – The Lenzing Group, a world-leading provider of wood-based specialty fibers, has received further scientific proof of the biodegradability of its fibers. In a study published in October 2021¹, scientists from the prestigious academic research institute Scripps Institution of Oceanography (SIO) at the University of California, San Diego confirmed that wood-based cellulosic fibers biodegrade in the ocean within a short period of time at the end of their life cycle, making them a better alternative to fossil-based fibers. The research was the result of an independent project trying to understand the "end-of-life" scenarios for textiles and nonwovens discarded in the environment.

SIO has a global reputation for being one of the oldest, largest and most important marine research centers worldwide. In this study, SIO compared the degradation processes of nonwovens made from fossil-based synthetic materials such as polyester with those of cellulosic materials such as Lenzing's wood-based lyocell, modal and viscose fibers in specific scenarios – under various real oceanic conditions and controlled aquaria conditions. The results of these experiments are striking: while wood-based cellulosic fibers fully biodegraded within 30 days, the fossil-based fibers tested were practically unchanged after more than 200 days.

"Our business model is one of a circular economy. We take wood from sustainable forestry and use a highly efficient system of processing all raw materials to produce fibers that are able to return to the ecosystem at the end of their life cycle", comments Robert van de Kerkhof, Member of the Managing Board at Lenzing Group. "The textile and nonwoven industries have to change. Our goal is to raise widespread awareness of major

¹ <https://www.sciencedirect.com/science/article/pii/S0048969721031314>

TENCEL™ CarbonNeutral® fibers

“Lenzing works closely with our partners, Lenzing is evolving our product offering to further drive the decarbonization of the textile value chain.

The launch of the first CarbonNeutral® fibers under the TENCEL™ brand in September 2020 is a milestone on our shared path towards CO₂ neutrality. The new CO₂ neutral fibers are certified as CarbonNeutral® products for the textile industry in accordance with the Carbon- Neutral Protocol.

These carbon-zero TENCEL™ branded fibers will help Lenzing's customers, especially brands and retailers to reduce their scope 3 emissions from raw material production and fulfill their scope 3 science-based target commitments.”

<https://www.lenzing.com/sustainability/decarbonization>

Visit STSC [to read more about TENCEL](#) And the Research.

Visit Lenzing's website to learn more about [Tencel Fibres](#)

Full certification is issued with STSC's Client Marketing Kit.



Launch of carbon-zero TENCEL™ fibers

We are working closely with our partners and evolving our product offering to further drive the decarbonization of the textile value chain. The launch of the first CarbonNeutral® fibers under the TENCEL™ brand in September 2020 is a milestone on our shared path towards CO₂ neutrality. The new CO₂ neutral fibers are certified as CarbonNeutral® products for the textile industry in accordance with the Carbon- Neutral Protocol. These carbon-zero TENCEL™ branded fibers will help Lenzing's customers, especially brands and retailers to reduce their scope 3 emissions from raw material production and fulfill their scope 3 science-based target commitments.

[learn more](#) →



Textile Overview for TENCEL™ MODAL + ROICA™ V550

SINGLE JERSEY KNITS

1. LENZING TENCEL™ MODAL + ROICA™ V550

Single Jersey. Weight. 180gsm (1.MOD85SJ180)

2. LENZING TENCEL™ MODAL + ROICA™ V550

Single Jersey. Weight. 180gsm (2.MOD95SJ180)

INTERLOCK KNITS

3. LENZING TENCEL™ MODAL + ROICA™ V550

Interlock Weight. 170gsm (3.MOD85INT170-DEVB) [also available via STSC CLUB](#)

4. CircActiv (1) - LENZING TENCEL™ MODAL + ROICA™ V550

Interlock Weight. 230-240gsm (4.MOD65INT230-DEVG) [also available via STSC CLUB](#)

5. CircActiv (2) - LENZING TENCEL™ MODAL + ROICA™ V550

Interlock Weight. 280gsm (5.MOD65INT280-DEVA)



Textile Overview for ECOVERO™ VISCOSE + ROICA™ V550

RIB KNIT

6. LENZING ECOVERO™ + ROICA™ V550 - RIB

Variety of rib widths available - thin, medium, thick. Weight. 135gsm - 250gsm (6.EV96RIB250) [also available via STSC CLUB](#)

SINGLE JERSEY KNIT

7. LENZING ECOVERO™ + ROICA™ V550

Single Jersey. Weight. 190gsm (7.EV95SJ190)

8. LENZING ECOVERO™ + ROICA™ V550

Single Jersey. Weight. 210gsm (8.EV95SJ210)

Textile Overview for COTTON + ROICA™ V550

SINGLE JERSEY KNIT

9. GRS RECYCLED COTTON + ROICA™ V550 - Stripe

Single Jersey - STRIPE **Weight.** 160gsm (9.GRS97SJ160)

10. GOTS ORGANIC COTTON + ROICA™ V550 - Pique

Pique **Weight.** 210gsm (10.OC95PIQUE210)

11. GOTS ORGANIC COTTON + ROICA™ V550

Single jersey **Weight.** 210gsm (11.OC91SJ210)

12. GOTS ORGANIC COTTON + ROICA™ V550 -

Single Jersey. **Weight.** 280gsm (12.OC89SJ280) **500KG available now white & black** [also available via STSC CLUB](#)

RIB KNIT

13. GOTS ORGANIC COTTON + ROICA™ V550 - Thin RIB - Melange

Rib Knit. **Weight.** 230gsm Variety of rib sizes and widths (13. OC99RIB230)

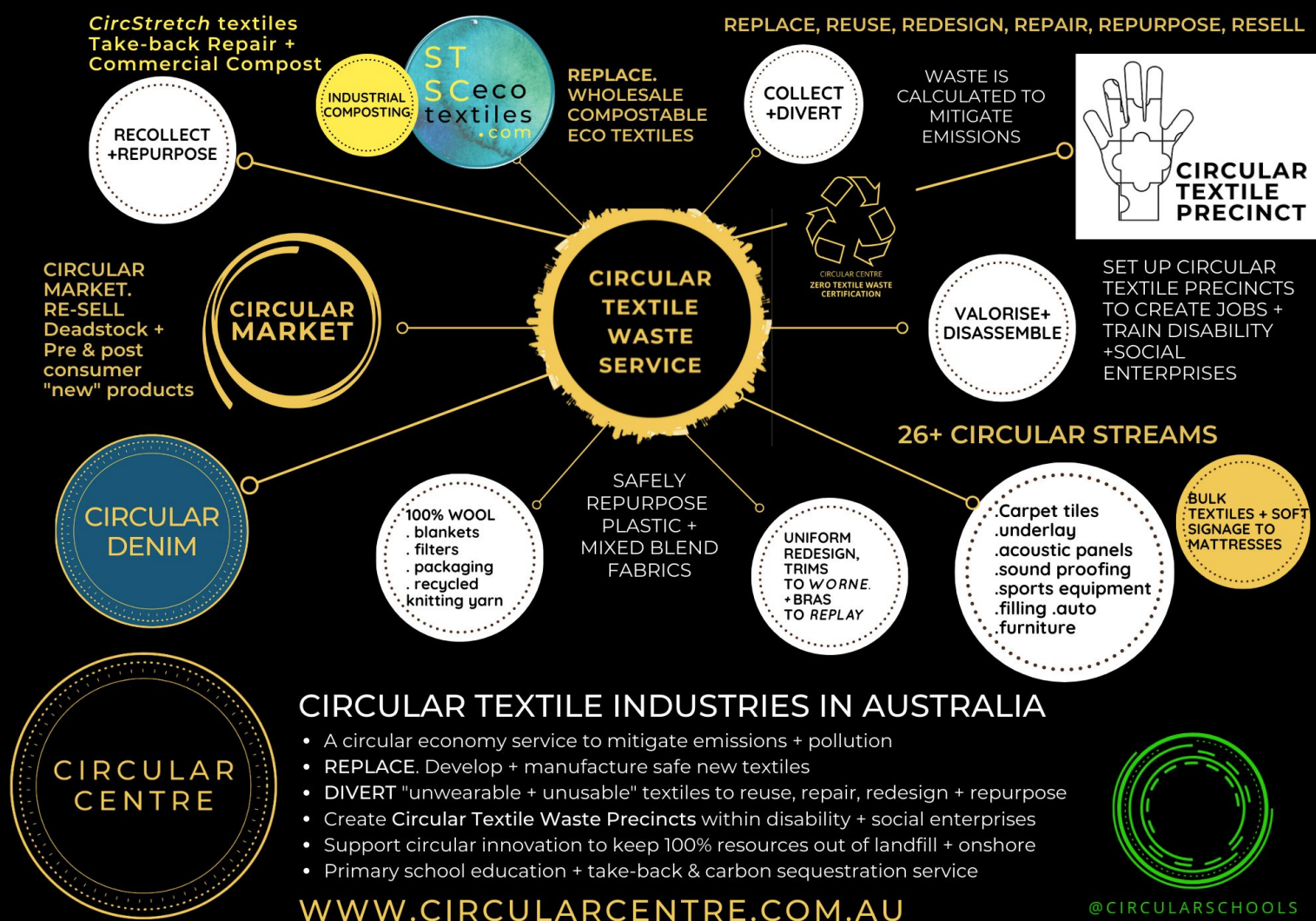
14. GOTS ORGANIC COTTON + ROICA™ V550 - Heavy weight RIB

Rib Knit. **Weight.** 385gsm Variety of rib sizes and widths (14 OC98RIB385)

CircStretch socks - ORGANIC COTTON + ROICA™ V550



BOTH GOTS AND GRS COTTONS CAN BE USED.
WE DO NOT RECOMMEND BCI COTTON UNLESS WE INVESTIGATE A SPECIFIC SUPPLIER FIRST.



STSC team launched the CircStretch collection at the 2021 *CSIRO India Australia Circular Economy Hackathon* presented by both countries Prime Minister's to foster collaboration specifically targeting plastic pollution.



Alison Jose, Director of the Circular Centre and STSC Sustainable Textile Supply Chain was invited by the Hon Sussan Ley MP, Minister for the Environment and The Hon Trevor Evans MP, Assistant Minister for Waste Reduction & Environmental Management, Commonwealth & Industry to exhibit and participate at the *National Clothing Textile Waste Roundtable* at Australian Parliament House, Canberra, 26 May 2021.

Attending Australia's National Clothing Textile Waste Roundtable

28 May 2021



Alison and her son Watson exhibiting at Parliament House Canberra

CIRCULAR DESIGN CONSULTATION.

HELPING BUSINESSES TO IMPLEMENT A HOLISTIC CIRCULAR ECONOMY SYSTEM

Clients can book a one-on-one consulting session to help you create a foundation and strategic pathway to implement circular design systems for businesses who use textiles to manufacture fashion, uniforms, accessories and products, whether you are at concept stage or intending to pivot existing manufacturing and end-of-life systems.

CONSULTATIONS

Consults are either in person or online, with an individual or your entire team. Session One is 2 hours.

Session One - AUD\$250 +GST. [See further details. https://www.stscecotextiles.com/book-a-consult](https://www.stscecotextiles.com/book-a-consult)

[Send a Request](#) to receive the Q&A and Invoice.

SESSIONS ARE CONDUCTED BY

[Alison Jose](#), Director of STSC and the Circular Centre and/or

[Ginia Chu](#), Textile Development and Production Specialist of STSC.

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Further Information, Price Lists and Order Process

CircStretch is available to garment producers worldwide from large retail requiring bulk textiles through to small designers who can purchase low MOQs via the [STSC CLUB](#) or create a mini-club via our [Facebook Group](#). At present the Smart Thread and CTWS is only available to 1000+kg clients and not via the STSC CLUB however we are working hard to try to offer this. We will soon also start to sell CircStretch “blank tees” for bulk buyers. **VIEW SOME OF THE [CIRCSTRETCH TEXTILES](#) AVAILABLE**

FIRST STEP.

Read, sign & share the [UN Climate Action Charter](#) to help acknowledge & guide you & your customers through this process with intention.

NEXT STEP to order 1000+kg MOQ - see next slide for

ORDER PROCESS to set up a meeting & receive the full Presentation + price lists for orders 1000+kg MOQ [contact Alison Jose](#)

Plus learn more about the Product Stewardship Scheme via *Circular Textile Waste Service* by visiting the [Circular Centre](#). More details in the Presentation.

NEXT STEP. 100+kg MOQ - see slide #19 for STSC CLUB orders

For more information on orders below the mill's MOQ please join [STSC CLUB](#) for the opportunity to join a bulk order and nominate 100+kg orders via an *Expression of Interest*.

PRICE LISTS TO COME.

Join the [Facebook Group](#) to create mini-groups for smaller orders.



ORDER PROCESS FOR 1000+KG. **BULK TEXTILES**



1. [Email Alison Jose](#) to register your interest in bulk production of *CircStretch* 1000+ kg.
2. Next step, we send our *Non Disclosure Agreement*, then send a **detailed Presentation including Price Lists**.
3. After discussing your requirements we send appropriate **swatches**. Clients can also provide sample swatches and/or TP for new developments.
4. Next step you purchase 2-5 metres of CircStretch blend for **1st Sampling** (note some blends may require new milling first).
5. Once the order is confirmed, **we connect you with our Smart Thread partners** plus request a **Purchase Order** to commence production.
6. We send an **Invoice** for **Development fees** plus **50% deposit** (FOB may be available for orders after 1st order)
7. **2nd Sampling**. 1 sample roll (approx 50-80 metres depending on the weight) is milled and sent for approval.
8. **Sampling roll** is approved or adjusted (2nd/3rd sampling is available and may incur extra cost)
9. Following approval we advance to **full production**.
10. **3-5 metres is sent** from the full production for approval.
11. Following the production approval, we issue a **Final invoice for full payment + freight charges**
12. We send our Marketing Pack that includes Certifications and logo information.
13. **Textiles are shipped direct** from China or India. Check your import duties & taxes.
14. STSC can recommend manufacturers for CMT but we do not manage the production.

STSC CLUB - 100+kg MOQ

VIA EXPRESSION OF INTEREST.



1. Step one, join the [STSC CLUB](#) and we will send you the Presentation plus Price lists for orders of 100+kg Or join the [Facebook Group](#) and create mini-clubs to share smaller orders amongst yourselves.
2. View the Available textiles online and nominate which textile/s to place your EOI including estimated number of kg/metres. Once you have placed an EOI you will receive an automated response. A following email will be sent only once we have met the bulk MOQ and have the ability to fulfil your order. **We are unable to determine the amount of time this will take.**
3. **Once the MOQ is met we will contact you and request you send us a formal Purchase Order to confirm your interest along with a link so you can purchase a swatch. Swatches are not sent out prior.**
If we don't hear from you we will call to ensure you don't miss out.
4. Once you receive the swatch and give final approve, we issue an **Invoice for 50% deposit.**
5. **Sampling.** 1 sample roll is milled for Sampling (approx 50-80 metres depending on the weight). Approximately 2-5 metres is then sent to you for approval (metres depending on gsm).
6. Following your approval, the order will advance to **full production and we issue an invoice for the remaining 50%.**
If you decided to not proceed then you will receive a refund minus USD\$200 for admin fees.
7. We send our Marketing Pack that includes Certifications and logo information.
8. Following payment of the **Final invoice + freight charges** the textiles are shipped direct to your nominated address from China or India. Check your import duties & taxes.

TIMELINES. We cannot give a timeframe for orders below 1000 kg. It is our goal to promote this opportunity & distribute this unique eco-textile as quickly as possible so all designers can stop using unsafe textiles and purchase at low MOQs. Its an enormous task to coordinate therefore we appreciate your patience & you wait to be contacted during the updates.

We are unable to offer smart thread or a Take-Back system with our Circular Textile Waste Service via STSC Club, we hope to in the future as we expand the Service.