

Cell Solution®



a product of smartpolymer

Cell Solution® LYOCELL SPECIALTY FIBRES AND THEIR PROPERTIES AND FUNCTIONS IN COTTON BLENDS

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Outline

Introduction

Lyocell Process

The functional Fibres:

Cell Solution® - CLIMA

Cell Solution® - PROTECTION

Cell Solution® - SKIN CARE

Applications

Outlook



Patented German Technology

developed by

Thuringian Institute for Textile and Plastics Research (TITK e.V.)

Rudolstadt, Germany

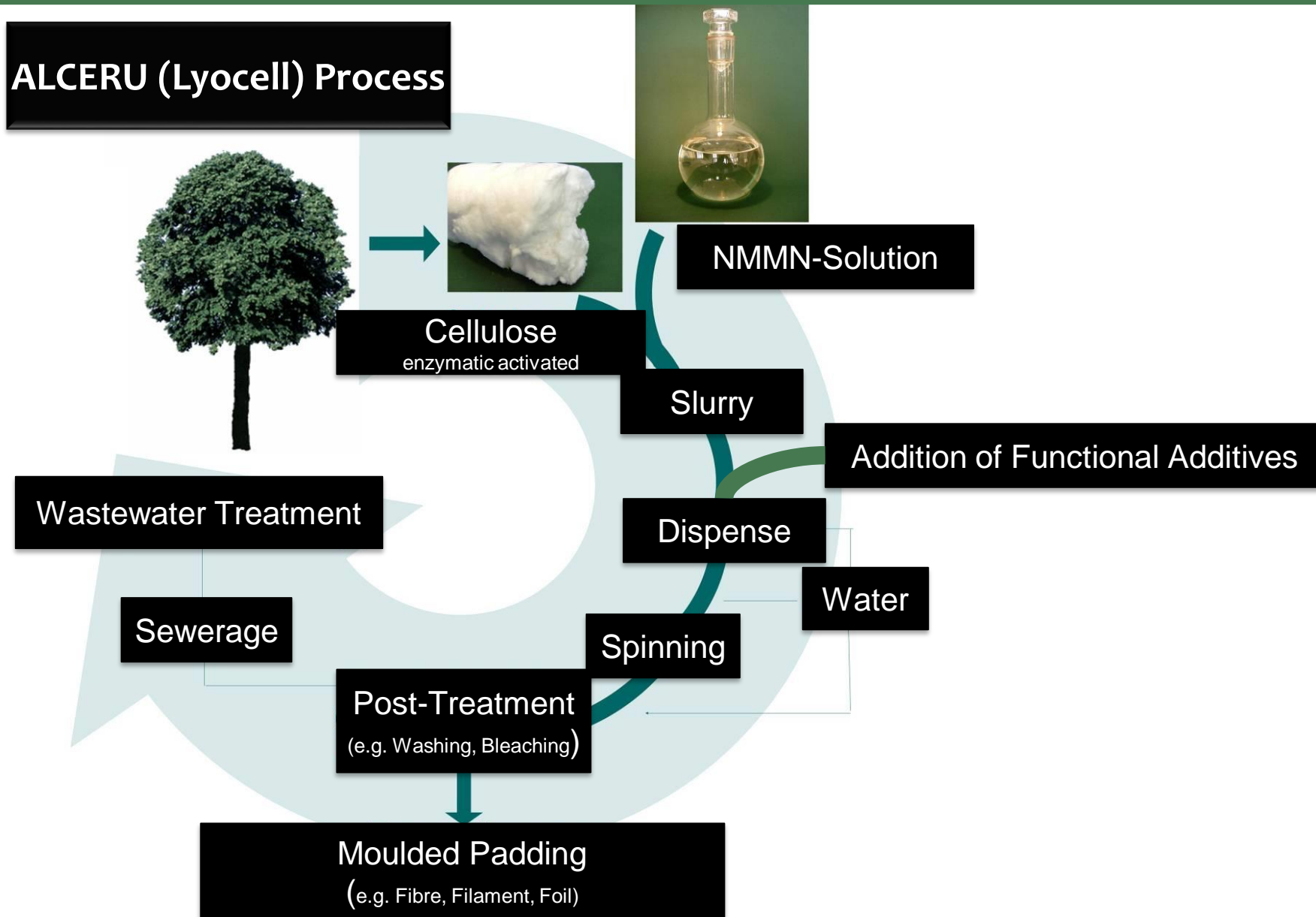


PCT

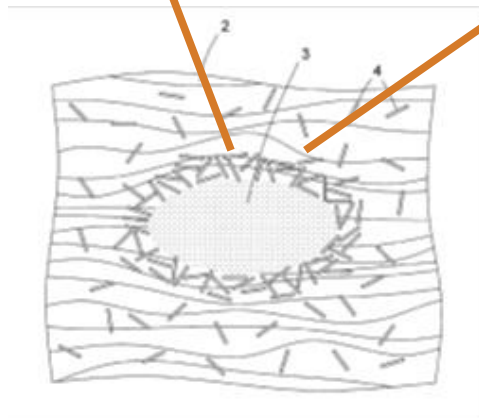
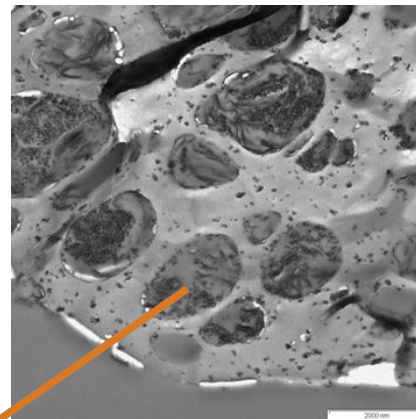
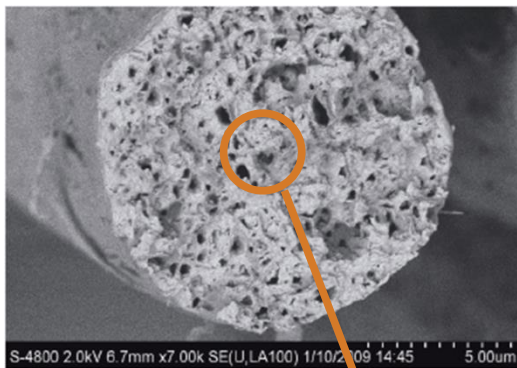


(10) Internationale Veröffentlichungsnummer

WO 2009/062657 A2



Cell Solution® - A new Lyocell-Type Fibre with Active Agents



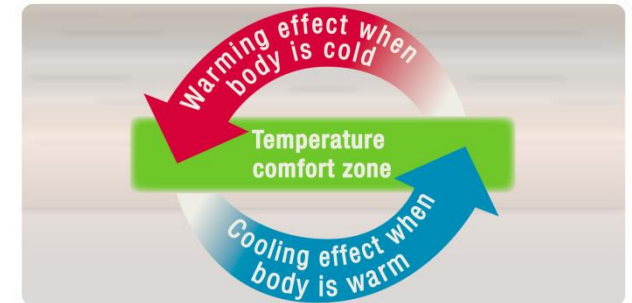
What is new?

- Incorporation of lipophilic substances into the fibre
- Depot of lipophilic substance
- **No Microcapsules; No Coating**
- An easy and long lasting storage system of active agents

Cell Solution® - CLIMA

Fibre for thermal regulation

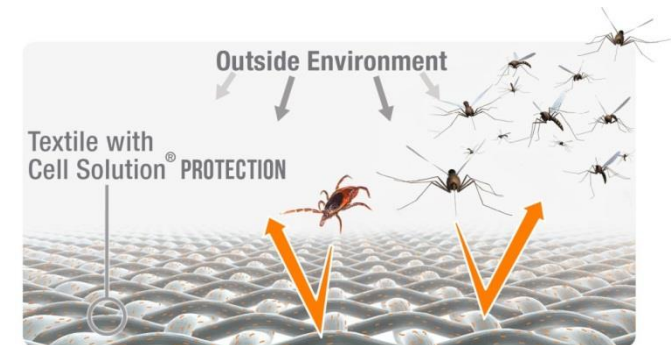
Active agent: Paraffin



Cell Solution® - PROTECTION

Fibre for Insect Protection

Active agent: Permethrin

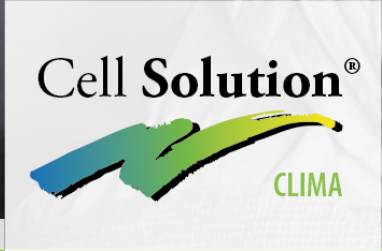


Cell Solution® - SKIN CARE

Fibre for Skin Care

Active agent: Tocopherol

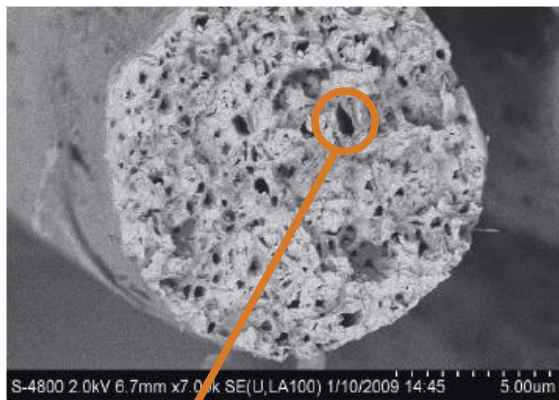




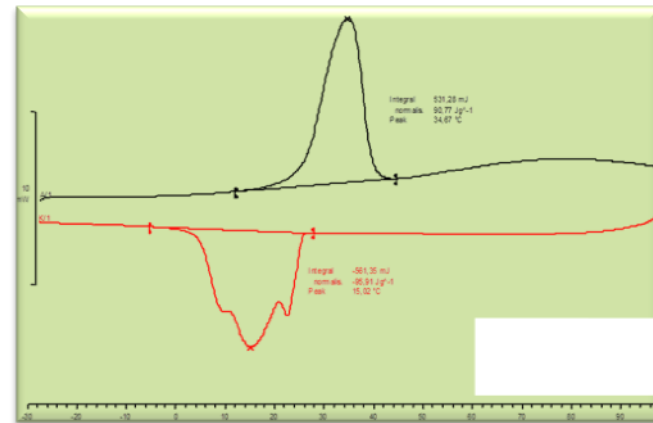
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Cell Solution® CLIMA

unique temperature regulation



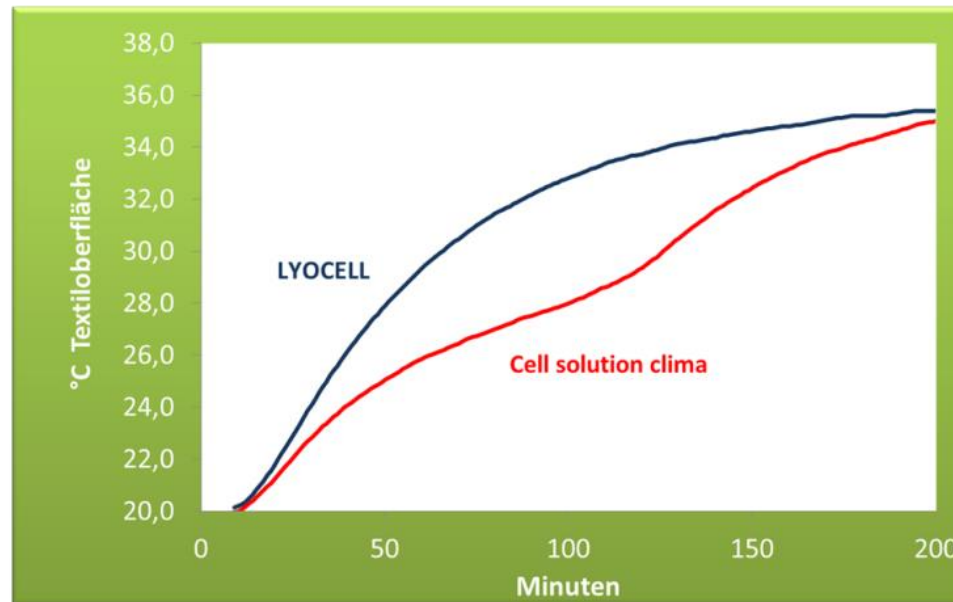
Paraffin wax as a thermal buffer



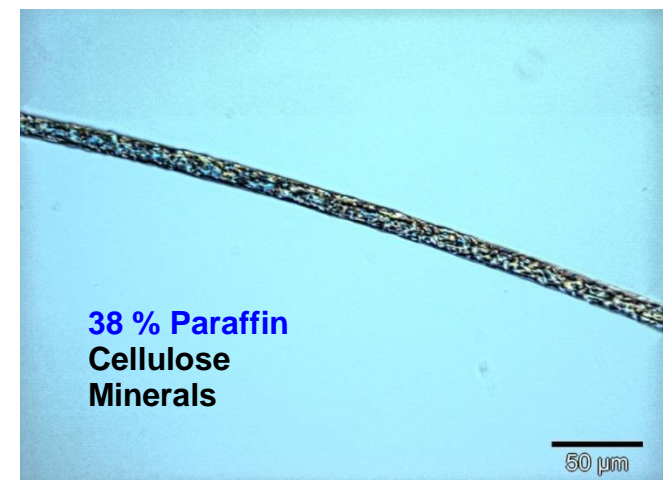
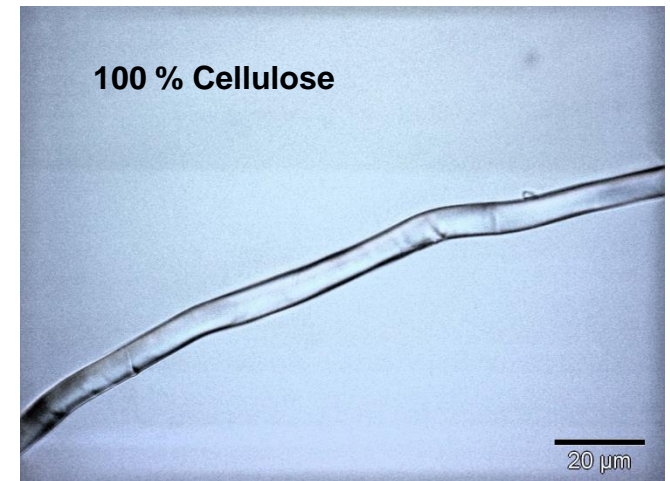
DSC-Analysis: high buffer capacity (50 – 90 J/g)

Cell Solution® CLIMA

Life-long thermal regulating property



High thermal regulating properties through the buffer-effect of the CLIMA fibre.



Cell Solution® CLIMA

Fibre 2,3 dtex \geq 50 J/g

Fibre 6,7 dtex \geq 90 J/g

Titre	2.3 / 6.7 dtex
Tenacity, conditioned	16 - 24 cN/tex
Tenacity, wet	14 - 20 cN/tex
Elongation, conditioned	11 - 14 %
Elongation, wet	13 - 18 %
Loop tenacity	3 - 5 cN/tex

smartpolymer GmbH

Breitscheidstraße 97

07407 Rudolstadt, GERMANY

is granted authorisation according to Oeko-Tex® Standard 100 to use the Oeko-Tex® mark, based on our test report 15.0.60736



Tested for harmful substances

according to Oeko-Tex® Standard 100

14.0.40537

Hohenstein

for the following articles:

Lyocell-staple fibre Cell Solution™ clima, raw white.

The results of the inspection made according to Oeko-Tex® Standard 100, product class I have shown that the above mentioned goods meet the human-ecological requirements of the standard presently established for baby articles.

Oeko-Tex Class 1

Cell Solution® CLIMA

≥20% of Cell Solution® CLIMA is recommended

Application in combination with Cotton:

- Socks
- Gloves
- Shirts
- Trousers
- Sportive Underwear
- Bedsheets
- Duvet- and Pillow covers
- Quilts

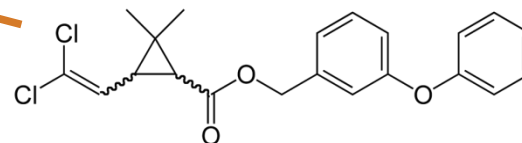
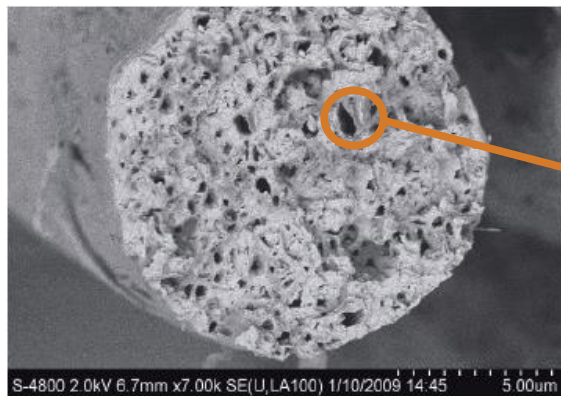




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Cell Solution® PROTECTION

Live-long insect protection



Permethrin,
recommended for insect protection by WHO

Fibre Composition:

- < 61 % Cellulose
- 8-10 % Permethrin
- ~ 16 % Paraffin
- ~ 6 % Minerals

Cell Solution® PROTECTION

Paraffin → Primary PCM function

Permethrin → Insecticide

Protective clothing with

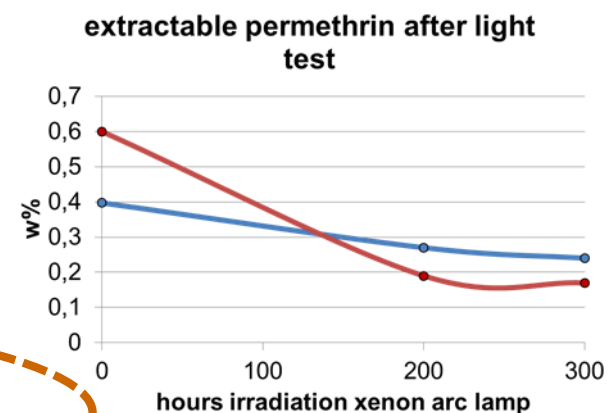
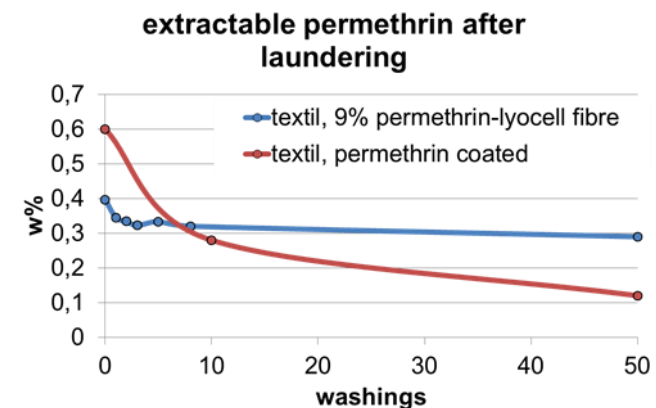
→ excellent washing stability

→ excellent UV – stability

in comparison to Permethrin-coated fabrics

Biological active Product (Öko-Tex)

Öko-Tex Class I certified for fabrics



Cell Solution® PROTECTION

Tested function after 100 washing-cycles:

- WHO tube test (Mosquitoes) ✓
- Test against ticks ✓
- Test against bed bugs ✓
- Test against dust mites ✓



Cell Solution® PROTECTION

15 % of Cell Solution® PROTECTION is recommended

Applications in combination with Cotton:

- Socks (ticks, mosquitoes)
- Garments for forest workers (ticks, mosquitoes)
- Military products (anti-vectors)
- Bedsheets (bed bugs)
- Tents
- Protection wear for Hunters and Fishermen (ticks, mosquitoes)





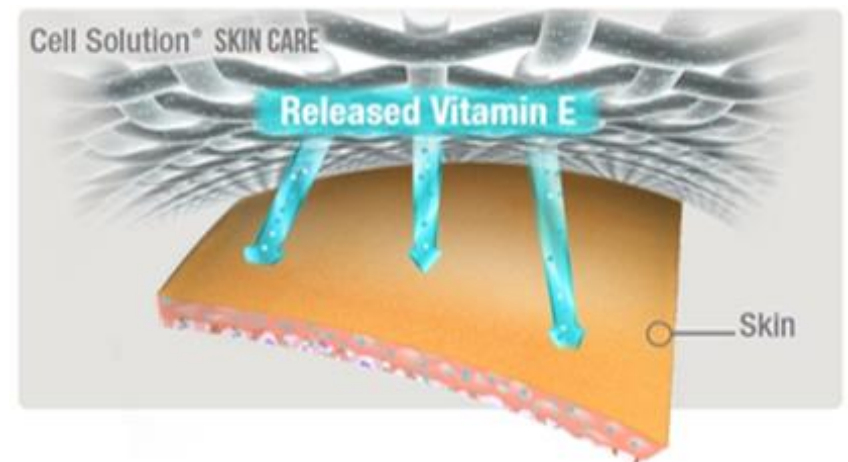
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Cell Solution® Skin Care

Fibre with Cosmetic Function !

Continuous release of Tocopherol:

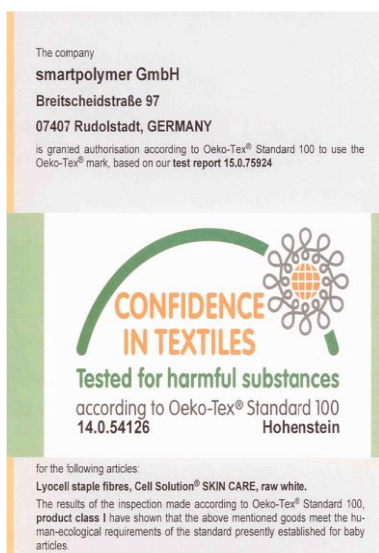
- life-long release of Tocopherol
- washing stability of active agent > 100 washing-cycles
- UV-stability



Cell Solution® Skin Care

Fibre Composition:

- < 61 % Cellulose
- > 6 % Tocopherole (Vitamin E)
- ~ 16 % Paraffin
- ~ 6 % Minerals



Oeko-Tex Class 1

Titre	2.3 dtex
Tenacity, conditioned	> 20 cN/tex
Tenacity, wet	> 17 cN/tex
Elongation, conditioned	12 – 15 %
Elongation, wet	14 – 15 %
Loop tenacity	6 – 8 cN/tex

Cell Solution® Skin Care

Fibre with proven Cosmetic Function

HOHENSTEIN ●

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Zuständig für Rückfragen / Contact person: Ulrike Zeitlmeier / Our ref: Julia Schnapf
Datum / Date: 12. August 2014

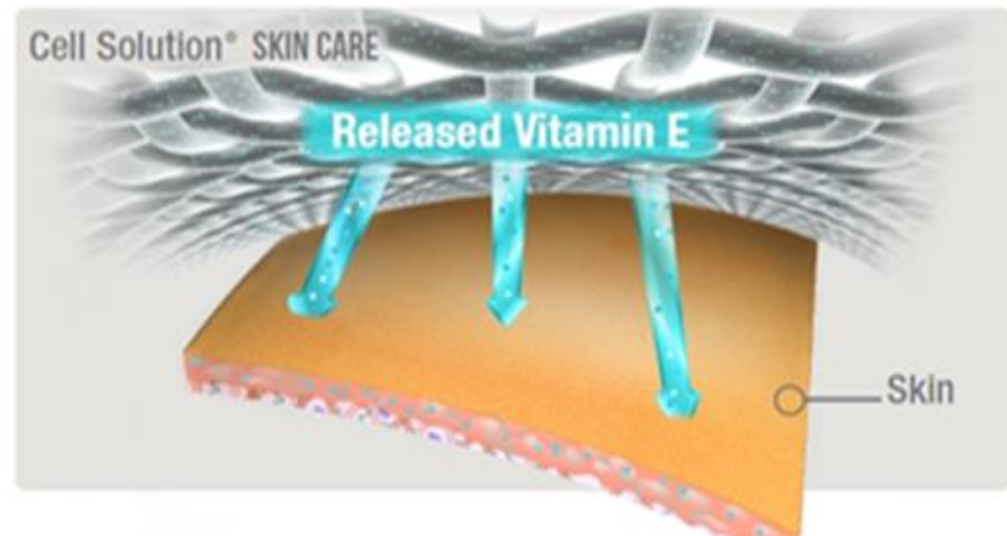
Prüfbericht Nr. / Test report no. 14.8.5.0091

Auftraggeber: siehe Anschrift
Client: see address
Prüfgegenstand: siehe Seite 2
Test sample: see page 2
Auftragsdatum: 07.07.2014
Date of order:
Eintrag Prüfgegenstand: 09.07.2014
Receipt of test samples:
Prüfzeitraum: 21.07.2014 bis / to 11.08.2014
Period of testing:
Probenahme: Der Prüfgegenstand wurde uns vom Auftraggeber übersandt.
Sampling: The test sample has been delivered to us by the client.

Der Prüfbericht umfasst 4 Seiten. / The test report comprises 4 pages.

Das Unternehmen gilt für die hier vorliegende
auftraggeber: smartpolymer GmbH, Bismarckstraße 37, 07407 Rudolstadt
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The transfer of active substance from textile to the skin was repeatedly tested e.g. by Hohenstein Laboratories (Test report no. 14.8.5.0091)

Cell Solution® Skin Care

20 % Cell Solution® SKIN CARE in the product is recommended

Applications in combination with Cotton:

- Bedlinen
- Underwear
- Nightwear
- Bathrobes
- Babywear
- Socks
- Gloves
- Semi-medical products



Outlook:

- Cell Solution® **CLIMA** → life-long thermal regulation
- Cell Solution® **PROTECTION** → life-long insect repellent
- Cell Solution® **SKIN CARE** → life-long skin protection

- **Cell Solution® a brand for future novel functional fibers**



**THANK YOU FOR YOUR ATTENCION
and
ENJOY LIFE WITH CELL SOLUTION FIBERS**

www.cellsolution.eu

