

Huntsman Textile Effects

Presentation on STRUTEX 2010

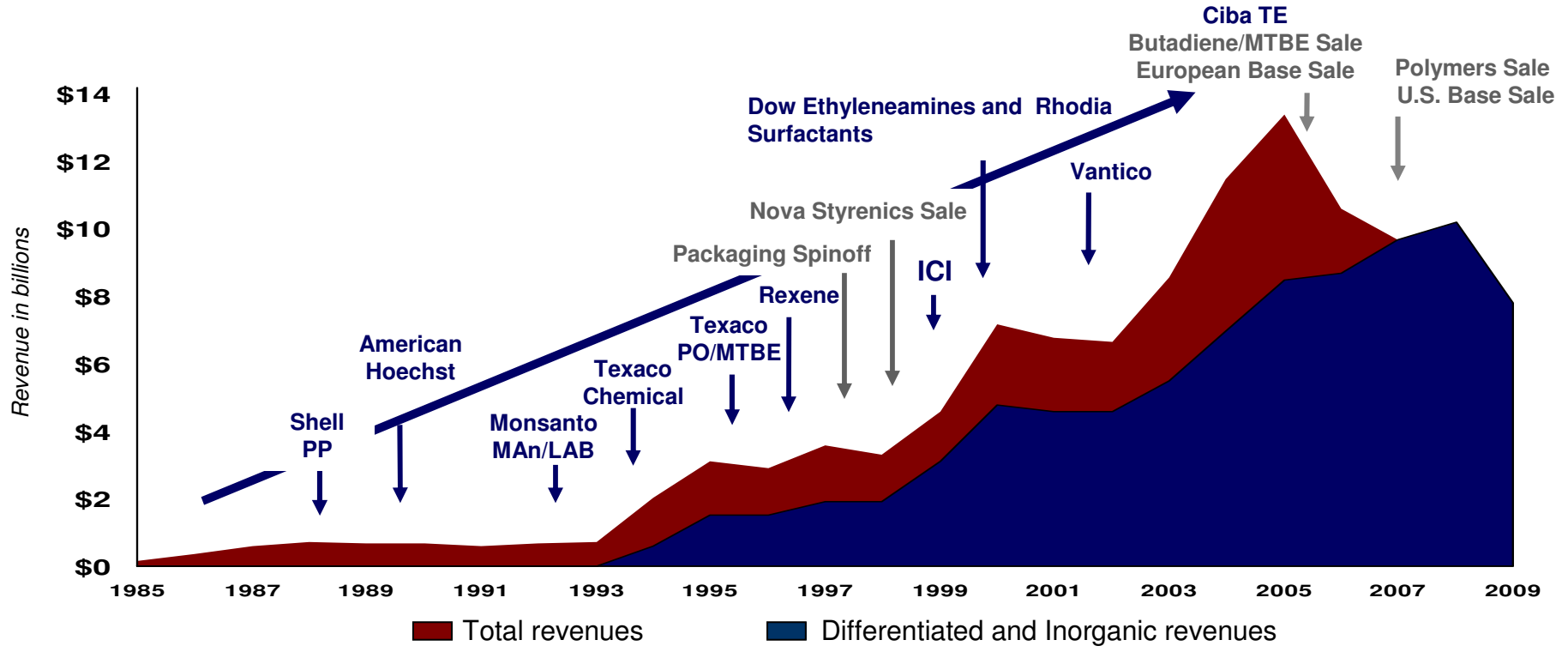


About Huntsman

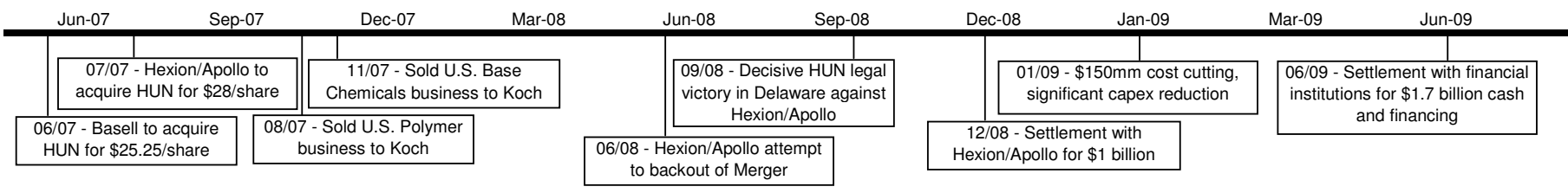


- Huntsman is a global manufacturer and marketer of differentiated chemicals. Its operating companies manufacture products for a variety of global industries, including chemicals, plastics, automotive, aviation, textiles, footwear, paints and coatings, construction, technology, agriculture, health care, detergent, personal care, furniture, appliances and packaging.
- Originally known for pioneering innovations in packaging and, later, for rapid and integrated growth in petrochemicals, Huntsman today has more than 11,000 employees and operates from multiple locations worldwide. The Company had 2009 revenues of approximately \$8 billion.

Huntsman Growth Story



Recent Events of Significance



Huntsman Business Portfolio

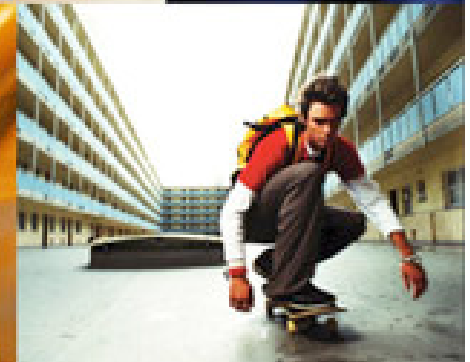
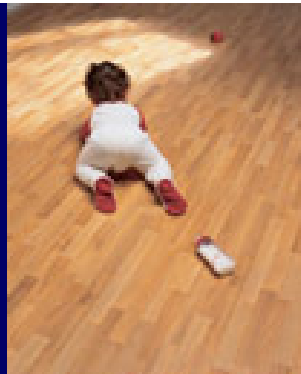
Differentiated				Inorganic
Polyurethanes	Advanced Materials	Textile Effects	Performance Products	Pigments
Adhesives, Coatings & Elastomers Appliances Automotive Composite Wood Products Footwear Furniture Insulation TPU	Formulated Systems Specialty Components Base Resins	Apparel & Home Textiles Specialty Textiles	Performance Specialties Performance Intermediates Maleic Anhydride & Licensing	Titanium Dioxide
				

Products and Markets

Polyurethanes

Markets include:

- Adhesives, Coatings and Elastomers
- Appliances
- Automotive
- Construction
- Composite Wood Products
- Footwear
- Furniture and Bedding



2009 Revenue: \$3,005 million

Products and Markets

Advanced Materials

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Enriching lives through innovation

Markets include:

- Adhesives
- Aerospace
- Automotive
- Coatings
- Construction
- Electronics
- Marine
- Power
- Sports and Leisure
- Wind Energy



2009 Revenue: \$1,059 million

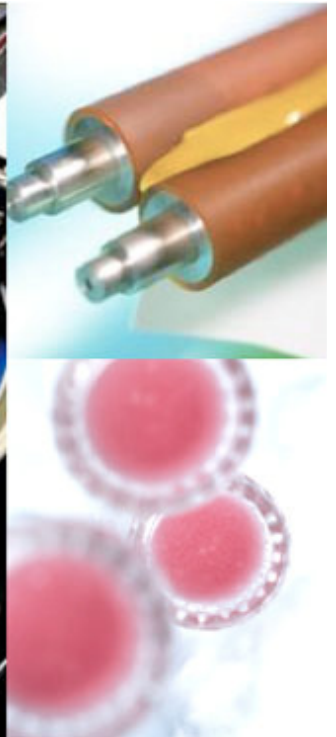
Products and Markets

Performance Products



Markets include:

- **Paints and Coatings**
- **Agriculture**
- **Fuels**
- **Construction**
- **Personal Care**
- **Gas Treatment**
- **Soaps and Detergents**
- **Ceramics**
- **Electronics**
- **Composites**
- **Paper**
- **Mining**
- **Metalworking**
- **Water Treatment**
- **Polyurethane Catalysts**



2009 Revenue: \$2,090 million

Products and Markets

Pigments

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Markets include:

- Coatings
- Plastics
- Inks
- Paper
- Ceramics
- Fibers
- Cosmetics
- Pharmaceuticals
- Food Additives



2009 Revenue: \$960 million

Products and Markets

Textile Effects

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Markets include:

- Apparel & Home Textiles
- Woven Functional Fabrics
- Specialized synthetics
- Wool
- Nonwovens
- Automotive
- Carpet
- Sportswear



2009 Revenue: \$691 million

Huntsman Textile Effects

TE - Processing solutions

TE - Value adding effects

TE - Environmental solutions



About Huntsman Textile Effects

- Textile Effects creates, markets and manufactures a broad range of chemical and dye products that enhance the performance properties and colors of finished textiles and materials.

It has a balanced global reach serving over 10,000 customers located in 80 countries and is the leading global supplier of comprehensive solutions for the textile industry. It provides innovative value adding effects and processing solutions to its customers such as brilliant colors with high fastness, easy care, durable protection against oil, water and fire as well as a complete range of pretreatment and dyeing auxiliaries.

The business has about 4,200 employees and operates 11 primary manufacturing facilities located in eight countries (Switzerland, Germany, France, USA, Mexico, China, Thailand and Indonesia).

TE - Aliances - TEFLON

- DuPont is a manufacturer of fluorotelomer-based products and is the owner and marketer of the Teflon® brand. DuPont is also responsible for stewardship issue management.
- Huntsman Textile Effects provides technical service and system packaging of fluorochemicals, compatible softeners, and resins to the mills, delivering consistent product and improved processing efficiencies.



TE - Aliances - SILPURE

- Thomson Research Associates (TRA) is the owner of the SILPURE® antibacterial technology and responsible for marketing Silpure® and providing lab testing support.
- Huntsman is responsible for selling the products and provides technical support.



TE - Aliances - 3x DRY

The outside of the textile is water, dirt and stain repellent.



On the inside any moisture is quickly absorbed and distributed over a large surface area, accelerating the evaporation process.

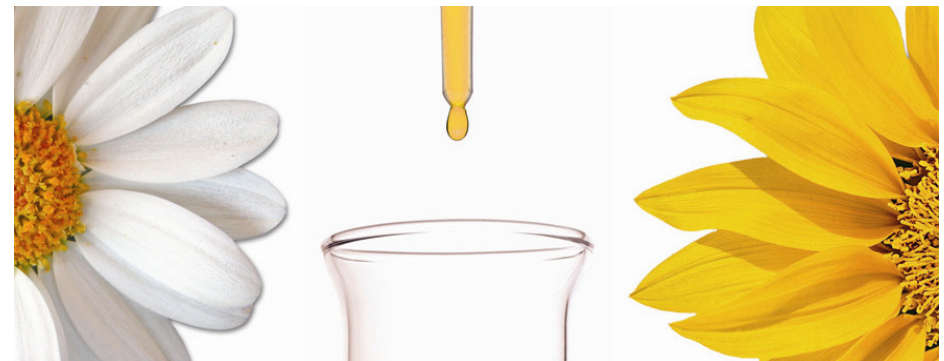


TE - Aliances - GENENCOR

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- Genencor focuses on discovering, developing, and delivering highly innovative, eco-friendly, efficient enzyme technologies.
- Huntsman Textile Effects is constantly developing new platforms that will improve fabric performance and reduce energy and water consumption in the textile industry.
- This joint effort is devoted to contributing towards making the textile industry more sustainable (**Gentle Power Bleach**)



Textile Effects - Processing solution



TE - Value adding effects – High IQ

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- A program designed to add value both for the consumer and the entire textile processing chain.
- High IQ® is the first comprehensive global branding program for textile colors and effects.
- 9 Intelligent effects: Cool comfort, Active comfort, Freshness on Demand, Active freshness, Lasting color, Sun protection, Sun protection for Kids, Easy Care Plus, Clean and Dry comfort

High IQ® is something new, clearly different and stands for INNOVATION and QUALITY!



HUNTSMAN Textile Effects

Taking Lead in Environmental Solutions



**A Revolution in Reactive Dyeing!
AVITERA™ SE and ERIOPON® LT**

Changing World – Emerging Needs

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Industry Needs

- ✓ Shorter/more robust dyeing procedures
- ✓ Reduced water consumption
- ✓ Reduced energy consumption
- ✓ Reduced effluent discharge
- ✓ Improved ecological image

- Save Resources
- Preserve the Environment
- Save Money



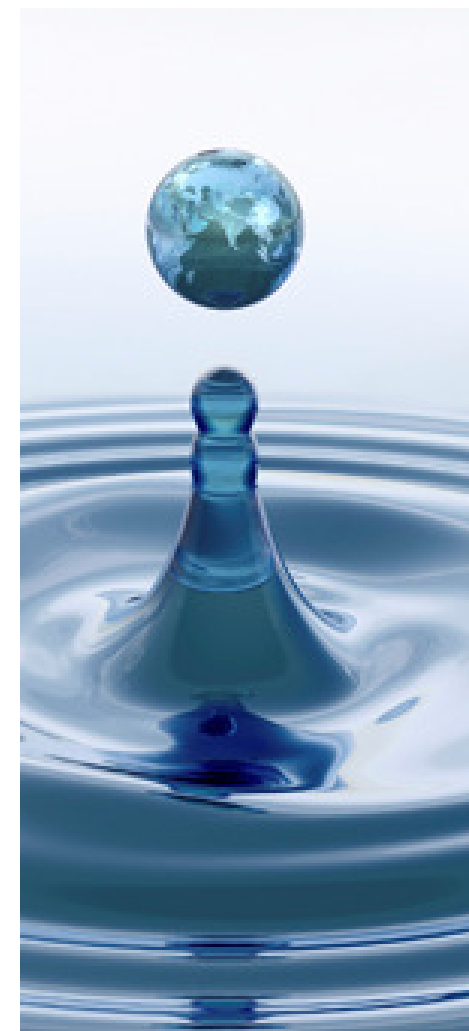
Sustainability requires INNOVATION!

Reactive Dyes – Next Generation?

The average water consumption for **dyeing**
1 kg of cotton

- Using conventional dyes
60 to 80 liters
- Using today's Best Available Technology (BAT)
Textile Effects: NOVACRON® FN dyes
30 to 40 liters

- ***Can there be a step change with a new technology to only use half the water?***



A Revolution in Reactive Dyeing!

AVITERA™ SE and ERIOPON® LT



AVITERA™ SE: Save the Environment

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Values per kg of Cotton

HOT DYES

WARM DYES



60-80

30-40

15-20 liter

AVITERA™ SE and ERIOPON® LT can save up to 50% of water and even more!

AVITERA™ SE: Save the Environment

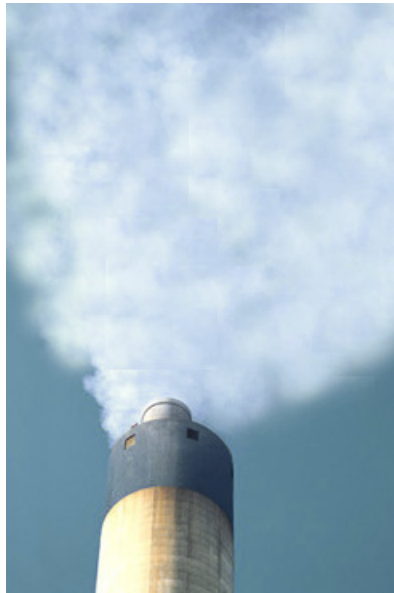
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Values per kg of Cotton

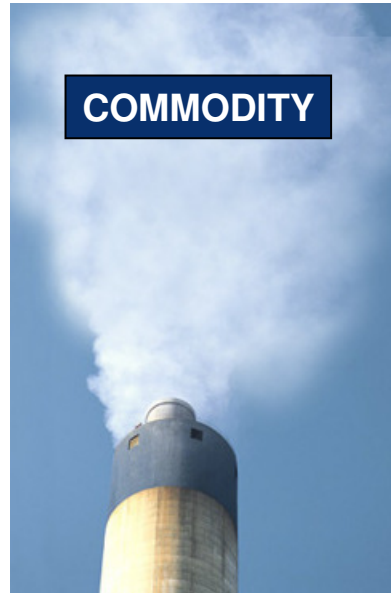
HOT DYES

WARM DYES



2.2

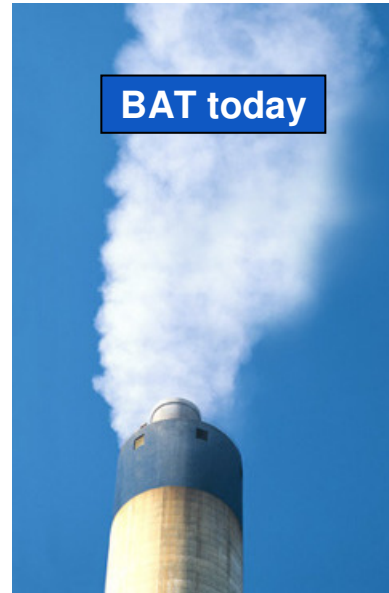
COMMODITY



6.5

1.5

BAT today



3.9

0.7 kg CO₂

AVITERA™ SE



1.7 kg steam

AVITERA™ SE and ERIOPON® LT can save up to 70% of energy and even more!

AVITERA™ SE: Save the Environment

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Values per Batch of Cotton

HOT DYES

WARM DYES



COMMODITY



7

BAT today



5.5

AVITERA™ SE



4 hours

AVITERA™ SE and ERIOPON® LT can save up to 50% of time and even more!

AVITERA™ SE: Save the Environment

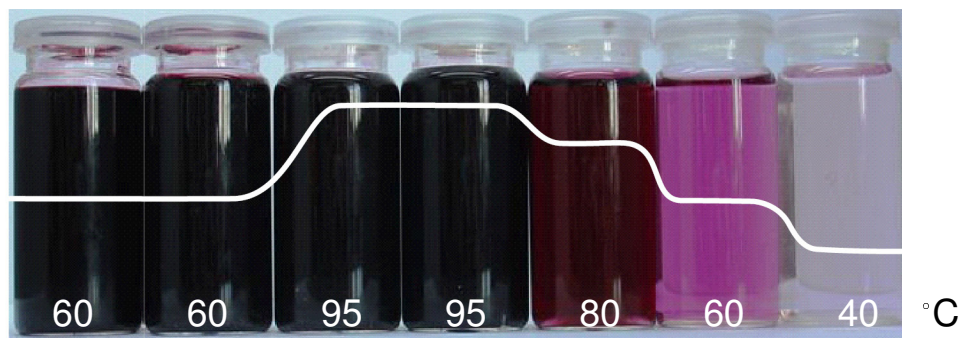
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Enriching lives through innovation

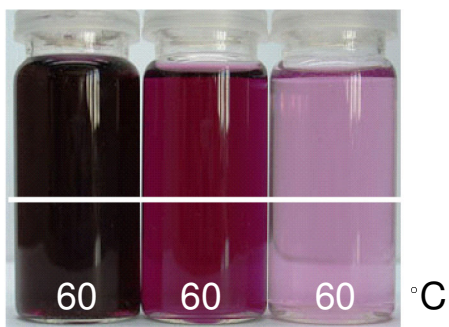
How does it work?

After dyeing the unfixed reactive dye must be removed from the fabric:

- For conventional dyes **6-8 baths at high temperature** are necessary



- For AVITERA™ SE dyes **3-4 baths at 60°C** are sufficient



Thanks to

- *a higher diffusion speed*
- *a very high fixation rate close to the exhaustion rate*



AVITERA™ SE: Save the Environment

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▪ Ecological Value:

- Reduced water use by up 50% and more
- Reduced energy use by up to 50% and more

▪ Economical Value:

- Reduced utility cost by 50%
- Reduced processing time (>25%)
- Increase productivity, avoid CAPEX
- Marketability to brands / retailers

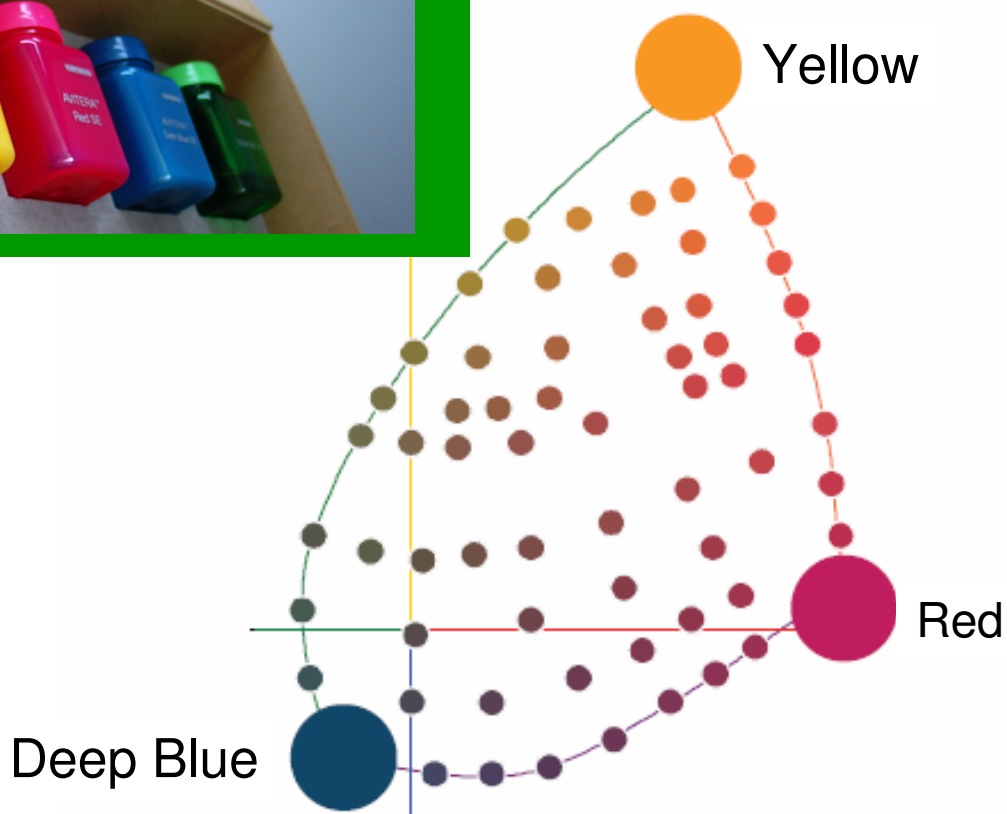


Focus on medium and dark shades!

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First 3 AVITERA™ SE dyes ...



... and more to come!

A full wet processing solution!

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From pretreatment to coloration

Powerful yet gentle pretreatment...

- GENTLE POWER BLEACH™—Bleaching at its best

Revolutionary new reactive dyes...

- AVITERA™ SE—Save the Environment

Efficient clearing

- ERIOPON® LT—Quick & Cool



GENTLE POWER BLEACH™

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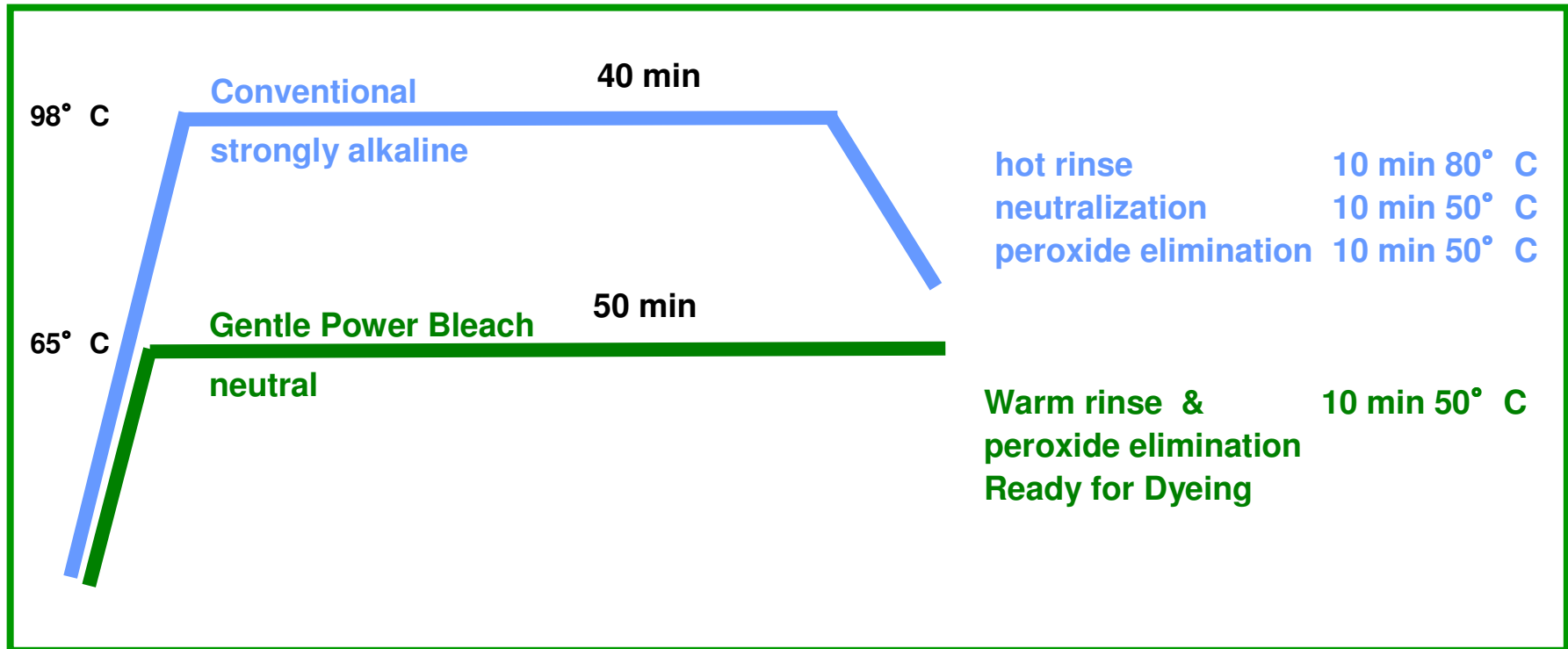
Sustainable enzyme-based peroxide bleaching at low temperature 65°C and neutral pH

- No harsh chemicals such as caustic, soft handle
- No pH neutralization required, safety in process
- Reduced salt load in the effluent
- Saving up to 50% energy
- Reduced the weight loss by 50%

The Life Cycle Assessment (LCA) indicates 25% lower climate change impact compared to conventional bleaching

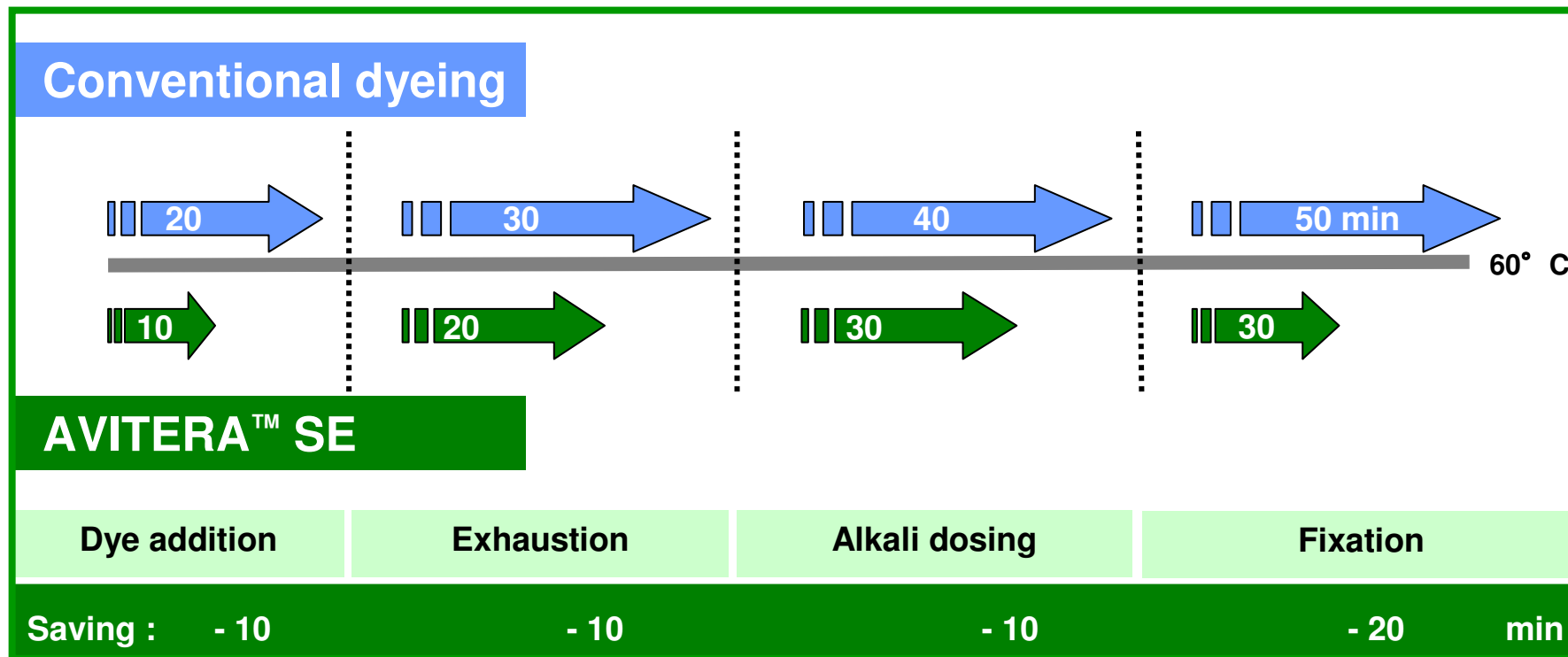


Pretreatment



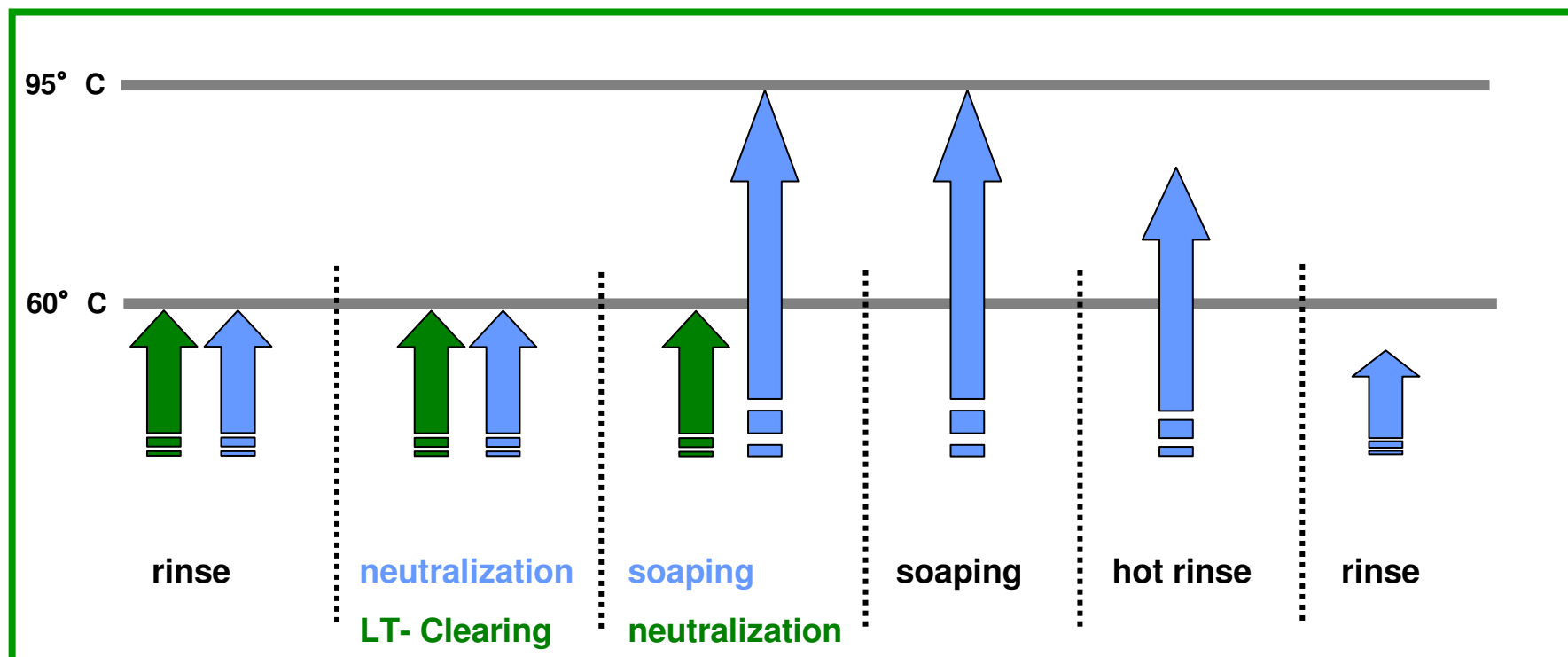
- Low temperature bleaching with 50% of water saving and reduced CO₂ emission!!
- Highest process safety for the following dyeing process due to a neutral pH.
- Much better fabric appearance and beautiful natural soft touch.

Dyeing process



50 min time saving compared to a conventional dyeing cycle !!

Washing off



Saving: Water consumption of 15 - 20 l/kg instead of 60 - 80 l/kg

At least 4 fresh water baths less

30% of time and 50% of energy and CO₂

ERiopON® LT – Quick and cool

HUNTSMAN

Enriching lives through innovation

Unique clearing additive designed for AVITERA™ SE

- Highly efficient under severe washing off conditions
 - ✓ *No control and adjustment necessary*
- Fast removal of the unfixed dyes at 60°C
 - ✓ *Reduced impact on environment & Increased productivity*
- Meets today's wet fastness requirements & improves fabric quality

Quick

Cool

Safe

Quick and cool — for maximum productivity with no compromise

Lower consumption — for greater sustainability



Serious savings

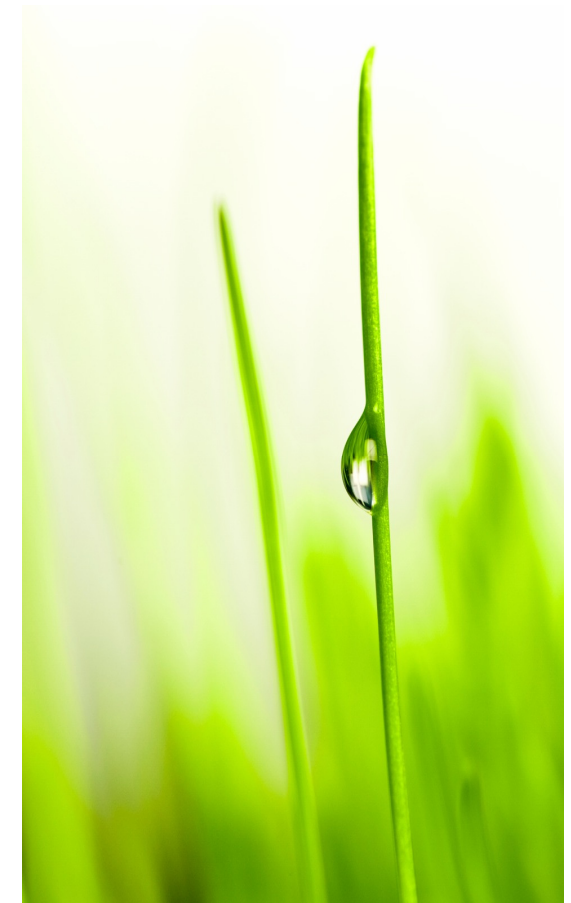
AVITERA™ SE and ERIOPON® LT

- Drastically reduce water and energy consumption
- Ensure highest reproducibility and shortest processing time
- Increase productivity without additional capital investment
- Minimize processing costs — increase profitability
- Exceed environmental legislation targets and differentiate yourself from competitors

Achieve new levels of environmental performance whilst saving money and improving your profit!

**Save 0.30 – 0.60 USD/kg processing cost =>
~40% of total processing cost**

That's serious!

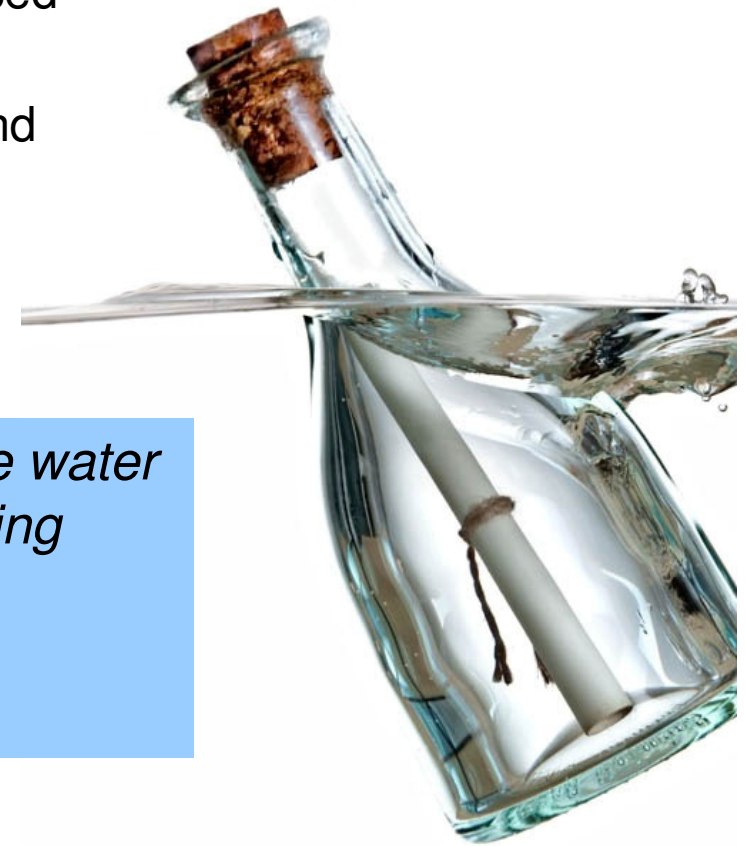


Mills

Seriously sustainable message

- Increasing consumer demand for products produced in a more sustainable way
- Cotton processing uses huge volumes of water and consequently energy
- Half of dyeing cost are driven by water and utility spending

AVITERA™ SE and ERIOPON® LT can reduce water and energy by 50% and more whilst still meeting consumer demands for fabric performance
Save 30 Liters of water and 1.5 kg of CO₂ emission per kg of cotton processed



Be the first to take the message to your customers

**Brands
Retailers**

Seriously responsible

HUNTSMAN

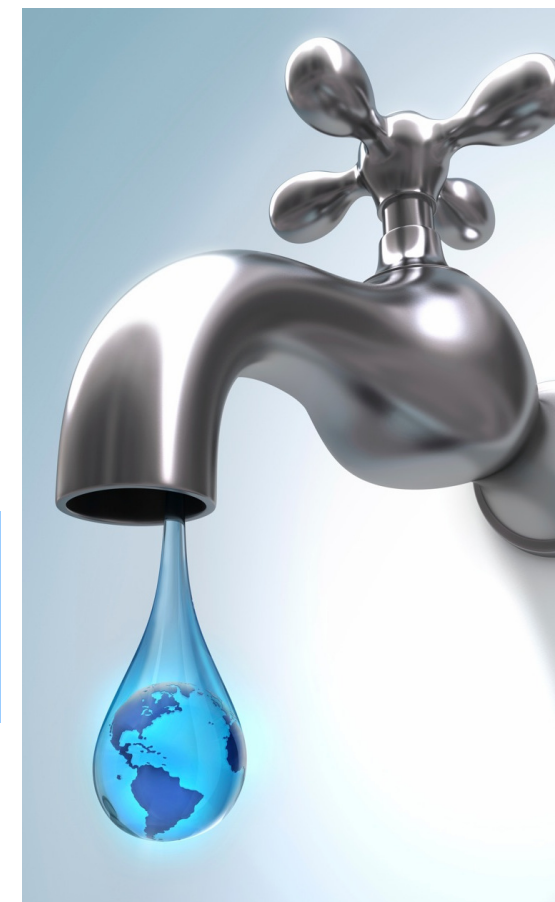
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- WHO (World Health Organization) guideline is that every person should have access to **3 liters of clean water every day**

As an average 100 liters of clean water is used to dye 1 kg of knitted cotton.


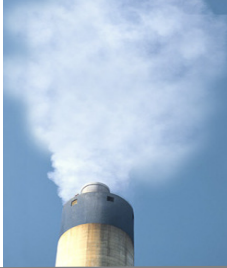


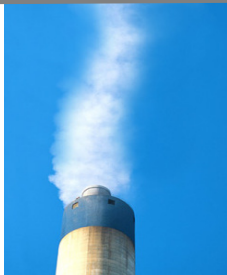

*Potential savings in the major Asian textile processing countries:
1.3 liter of fresh water per day/person!*

Drive the change for your community!



**Legislators
Government
Associations**

AVITERA™ SE: Save the Environment

	water	Steam / CO ₂	time	
Commodity	60-80 l/kg 	6.5 / 2.2 kg 	7 h 	Values per kg / Cotton
AVITERA™ SE	15-20 l/kg 	1.7 / 0.7 kg 	4 h 	

Beside a drastically water reduction also energy, CO₂ emissions and time are significantly reduced !!

Links

- www.huntsman.com
- www.high-iq.com
- www.silpure.com
- www.3XDRY.com
- www2.dupont.com/Teflon/en_US/index.html
- www.genencor.com

**Thank you very much for your attention
I am glad to answer your questions**

-
- Ing. Petr Štoček
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