Putting *FUTURE into Textiles.
BASF Finishing Technology
Customer Seminar

Two Is Better Than One
Go Spotless with the pair that binds

Lurotex® Duo System (based on C6 technology)
• Stain Repellent
• Stain Release

Prepared by Sharon Tan
Textile Chemicals – Putting FUTURE into Textiles.

New Generation
Lurotex® Duo System

Repellent
Lurotex® Protector RP ECO + Perapret® Booster XLR

Release
Lurotex® Protector RL ECO + Perapret® Booster XLR
Public Concerns over PFOA

- No conclusion/proof on its hazard to human health or environment

- Industries, including leading companies and organizations have voluntarily committed to reduce global facility emissions and product content of PFOA by 95% by 2010, and to work toward eliminating emissions and product content by 2015 (2010/15 PFOA Stewardship Program)

- In the Textile Industry, retailers and brands have set PFOA requirements, such as specifying limits for PFOA of around 1 ppm in finished textiles

- No national regulation on PFOA. Except for some voluntary program to control PFOAO emissions.

* Source: EPA in the US (www.epa.gov/oppt/pfoa)
Retailers’ Specification

WHO SPECIFY at 1ppm PFOA on fabric Examples:

- NIKE
- Carrefour
- S’ Oliver
- Gap
- Levi’s
- Next

BASF Lurotex Duo System based on C6 technology using

Lurotex® Protector RP ECO
Lurotex® Protector RL ECO
Two is Better Than One
Go Spotless with the pair that binds

**Lurotex® C6 Repellent**

Fabric Surface

**Lurotex® Protector RP ECO**

**Perapret® Booster XLR**
Lurotex® Duo Systems
Ecological & High Performance

Lurotex® Duo System for Stain Repellent
Functions of the two components of the Duo System
Two is better than one!

- Lurotex Protector RP ECO Stain Repellent Water and Oil Repellent Properties
- Perapret Booster XLR High Level Wash Durability

Based on OS Technology: ECOLOGICAL
Boosts the spotless effect: HIGH PERFORMANCE

- Spotless Effect
- One system for all substrate applications
- No impairment of whiteness
- High durability of water, oil and dirt repellent effect
- Soft fluorocarbon polymer with a soft handle
- Laundry air dry

Untreated fabric
Treated fabric

OCT 2010
Performance & durability
Lurotex® Duo System – C6 Repellent

Example I
- 100% cotton shirting quality,
- 40g/L of Lurotex® Protector RP ECO, 4g/L Perapret® Booster XLR:
  - 0X: 100%
  - 20X @ 60°C: 90%
- Spray†: 100%
- Water Drop‡: 9%
- Oil Drop*: 7%

Example II
- 100% Polyester
- 50g/L of Lurotex® Protector RP ECO, 5g/L Perapret® Booster XLR:
  - 0X: 100%
  - 20X @ 40°C: 90-100%
- Spray†: 100%
- Water Drop‡: 10%
- Oil Drop*: 6%

Remarks: † AATCC 22, ‡ AATCC 118, * AATCC 193
Two is Better Than One
Go Spotless with the pair that binds

*Lurotex® C6 Release*

+ Lurotex® Protector RL ECO
+ Perapret® Booster XLR

Textile Chemicals – Putting *FUTURE* into Textiles.
Lurotex® Duo Systems
Ecological & High Performance

Lurotex® Duo System for Stain Release

Functions of the two components of the Duo System
Two is better than one!

Lurotex® Protector RL ECO
Stain Release
Easy Wash Out Properties

Perapret® Booster XLR
High Level Wash Durability

Based on C6 Technology:
ECOLOGICAL
Boosts the spotless effect:
HIGH PERFORMANCE

- Spotless Effect
- One system for all substrate applications
- No impairment of whiteness
- High durability stain release effect
- No impairment of handle

Coffee

Treated fabric

After washing

Untreated fabric
Textile Chemicals – Putting * FUTURE into Textiles.

Performance & durability
Lurotex® Duo System – C6 Release

Example I

- 100% Cotton Jersey
- 40g/L of Lurotex® Protector RL ECO, 4g/L Perapret® Booster XLR:

<table>
<thead>
<tr>
<th>Stain Release test (AATCC 130)</th>
<th>0X*</th>
<th>30X @ 60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Oil</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Corn Oil</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Ketchup</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Chili Sauce</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Coffee</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Tea</td>
<td>4-5</td>
<td>4-5</td>
</tr>
</tbody>
</table>

*There is some repellent performance for C6 Release technology:

<table>
<thead>
<tr>
<th>Spray (AATCC 22)</th>
<th>50</th>
<th>0X</th>
<th>30X @ 60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Drop (AATCC 193)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Oil Drop (AATCC 118)</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Why Lurotex® Duo System – C6 technologies
Two is Better Than One

How Perapret® Booster XLR contribute to the DUO system

What’s ‘Duo System’?

TWO = Perapret® Booster XLR + Lurotex Protector RP ECO or Lurotex RL ECO

Benefits of BASF’s Lurotex® C6 technologies:

- Soft curing temperature
- No impairment of soft handle
- High performance and durability
- Maintain pure white color after heat treatment

ONE = Conventional fluorocarbons contained in a built-in booster

Disadvantages:

- Higher temperature curing
- Yellowing
- Harshness on handle
Lurotex® Booster: Unblocked Isocyanate
Perapret® Booster XLR

- Booster of unblocked isocyanate react at lower orientation temperatures
- Show less yellowing with heat treatment
- Show no impairment of handle
- Have limited stability in aqueous solution
Value Proposition
Lurotex® Duo Systems

- Versatile in substrate application on cellulosics and synthetics
- High Level of performance
- Excellent Spotless effect
- Laundry Air Dry for repellency
- High permanence of effects
- No influence of handle
- Provides added value effects combination with BASF wrinkle-free system
- Process reliability

The “BOND” like no other, synergize SPOTLESS effect
CONCLUSION

- **Duo boosts the performance**
  - Lurotex® Duo Systems are made up of two components
  - Lurotex® fluorocarbon finishes and a unique Perapret® booster.

- **Ecological**
  - Lurotex® fluorocarbon finishes are based on C6 technology.
  - Compared to products based on the current C8 technology, the trace of PFOA (perfluorooctanoic acid) is reduced to below the level of detection with state of the art analytical methods.

- **High Performance**
  - Perapret® booster has been specially developed to enhance the performance of the Lurotex® fluorocarbon finishes.
Putting *FUTURE into Textiles with Lurotex® Duo Systems - C6 technology

**Consumer Safety**
- Non-detectable level of PFOA
- Conforms to Öko-Tex Standard 100 (all product classes)
- REACH and RSL of various retailer (restricted substance list)

**Resource Saving**
- Less frequent washing is required
- Extend the garment life cycle

**Climate Protection**
- Washing temperature can be lowered
- Less tumble drying (Laundry Air Dry Effect)
- Less ironing
Two Is Better Than One
Go Spotless with the pair that binds

- Ecological & high performance
- Lurotex® Duo System (based on C6 technology)
- Stain Repellent
- Stain Release

Putting *FUTURE into Textiles
Note:
The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions drawings, photographs, data, proportions, weights, etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. Responsibility for compliance with the requirements of the downstream textile market rests with the textile processor.
Thank You
Textile Chemicals – Putting *FUTURE into Textiles.
Perapret® Booster: Unblocked Isocyanate

Perapret® Booster XLR

Reactive Anchor

Gentle Fixation

Heat Curing

Perapret® Booster XLR + Lurotex® Protector C6 fluorocarbon

- 2 components in the finishing
- “duo” system for synergistic effects
Conventional Booster
Blocked Isocyanate

Standard Fluorocarbon

Aqueous phase

Aggressive curing conditions to Deblocking the protective group

Fixation

The blocking agent is released to the air

Standard Fluorocarbon with built-in blocked isocyanate

Protective group
Reactive anchor
Blocked isocyanates need higher aggressive curing conditions, higher temperature and longer time

- expose to high risk yellowing
- harsh handle

Blocked isocyanates made of aromatics will yellow with heat treatment

Blocked isocyanate are stable in aqueous solutions
Lurotex® Duo Systems based on C6 technology

Lurotex® Protector RP ECO & Perapret® Booster XLR

Repellent based on C6 technology
ECOLOGICAL

Boosts the spotless
HIGH PERFORMANCE

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Textile Chemicals – Putting * FUTURE into Textiles.

Lurotex® Duo Systems based on C6 technology

Lurotex® Duo System - Stain Release

Lurotex® Protector RL ECO & Perapret® Booster XLR

Treated, Stained & Washed
Untreated, Stained & Washed

Release based on C6 technology ECOLOGICAL

Boosts the spotless HIGH PERFORMANCE

Two Is Better Than One
Go Spotless with the pair that binds
Compatible to use with Fixapret® and Purista®

- Fixapret® product range for wrinkle-free/wrinkle resistance –
  - modern easy care garments, most popularly applied on cotton garments for work and business travel