DuPont™ Teflon®
Stain Protection

AN INVISIBLE SELLING FEATURE WITH HIGHLY VISIBLE BENEFITS

let life happen™
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Teflon® Stain Protection

WHAT IS IT?

• Teflon® Stain Protection is a durable fluorochemical finish
• Forms an invisible shield around each fiber

While many stain resistance products are merely a surface coating for fabrics, Teflon® works on the nano scale—that is, on the molecular level—to protect each fiber in fabrics that go into the apparel, home furnishings, and other textile segments.
Teflon® & Zonyl®
WHAT’S THE DIFFERENCE?

Teflon® is a DuPont registered trademark that can be used once fabrics treated with Zonyl®/Oleophobol® products meet specific performance criteria.

Zonyl® refers to a range of fluorochemical products manufactured by DuPont
Fluorochemicals
THE CHEMICAL STRUCTURE OF STAIN PROTECTION

- Teflon® fluorochemical products for textiles contain functional “combs” along a polymer “backbone” which allow the Teflon® treatment to become attached to the textile during professional application. Usually acrylic- or urethane-based, the polymer makeup determines whether the treatment will behave as a repellent or release, and enables the treatment to withstand normal laundering or manufacturer’s care instructions.

- The fluorocarbon side chains pack closely together to create a stain-resistant surface.

- The best orientation of the side chains occurs when there is no branching, and the fabric has been subjected to heat during processing, or during dry pressing after washing.
Fluorochemicals
THE CHEMICAL STRUCTURE OF STAIN PROTECTION

Stain Repellency

WATER

The fluorinated finish renders the fabric water- and oil-repellent

OIL

Stain Release

WATER

The fluorinated finish with the addition of water-loving component allows absorbed stains to wash out

OIL
DuPont™ Teflon®
TWO OPTIONS FOR STAIN PROTECTION

Untreated          Treated
Teflon® Stain REPELLENCY

Untreated          After Washing Treated
Teflon® Stain RELEASE

The miracles of science™
Repellency

Teflon® forms a molecular barrier around the individual fibers to lower the critical surface tension (CST) so that the fabric does not attract stains or soil.

AS A RESULT...

• Liquids bead up and roll off the fabric.

• Spills can be blotted up quickly with a clean, dry, absorbent cloth.
Teflon® provides the advantage of unmatched resistance to BOTH oil- and water-based stains. In contrast, many stain-protective treatments applied to fabrics today are hydrocarbon based, and are ONLY water repellent.
Teflon® brand fluorochemical finishes change the critical surface tension of the fabric to such a great extent (15mN/m) that the fabric is rendered water- and oil-repellent.
Release

Teflon® Stain Release allows stains to be removed more easily during laundering than most common untreated fabrics.

AS A RESULT...

• Stains temporarily soak into the fabric.

• Hydrophilic “water-loving” portion of finish draws in detergent and water.

• Stains wash out more easily.
Teflon®
A SUPERIOR LEVEL OF RELEASE

Fibers protected with Teflon® allow easy release of both oil- and water-based stains during laundering or manufacturer’s care instructions.
Teflon®
A SUPERIOR LEVEL OF RELEASE

Stains soak in initially, but are rolled up and easily released from fabric during the wash step of the laundering cycle.
How is Teflon® Applied?

• Apply Teflon® Stain Protection by pad, vacuum, foam, kiss coat, exhaust, coating, or yarn treatments. Garment finishing is also optional.

• The pad process is the most common: The fabric is immersed in a water bath containing a Zonyl® product; the excess is squeezed out; and then the fabric travels through an oven to dry and cure the finished fabric.

• Benefits:
  – No additional capital equipment is necessary.
  – Teflon® is compatible with other finishing agents such as selected softeners and wrinkle-free additives.
The Padding Process
APPLYING TEFLON® STAIN PROTECTION

The padding method offers high wet pick up, thorough wetting, and complete coverage. Typical curing conditions are 300-330°F for 1-2 minutes.
How Teflon® Takes Hold
AN ENGINEERED BOND

Application to Fiber Surface

HEAT

Melt Spreading & Surface Coverage

What’s Happening?
• Water evaporates.
• Polymers melt and spread.
• Fluorocarbon side chains are oriented away from the surface.
Drying & Curing

APPLYING TEFLON® STAIN PROTECTION

Drying and curing fabric treated with Teflon® is a crucial final step in achieving optimal performance:

• Assures formation of invisible shield around each fiber.
• Ensures optimal durability and bonding between the finish and the fabric.
• Removes any wetting agent used to apply Teflon® to the fabric.
• Also cures other components that may be in the pad bath, such as wrinkle-free derivatives.
# TROUBLESHOOTER FOR Repellency

<table>
<thead>
<tr>
<th>Oil Repellent?</th>
<th>Water Repellent?</th>
<th>Possible Cause</th>
<th>Possible Remedy</th>
</tr>
</thead>
</table>
| No             | No               | Undercured     | • Reduce tenter speed  
|                |                  |                | • Raise temperature |
| No             | No               | Low loading level | • Adjust recipe  
|                |                  |                | • Increase pick-up |
| Yes            | No               | Residual wetting agent | Rinse fabric thoroughly |
| No             | Yes              | Excess or wrong softener or defoamer, i.e. silicones | • Adjust recipe  
|                |                  |                | • Scour fabric |
| Yes            | Yes              | Correct preparation + Correct formula + Correct curing | PROVIDES BEST PERFORMANCE! |

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**Repellency**

The miracles of science™

Teflon®

suit protection
# Troubleshooter for Stain Release

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| Yes            | Yes          | Correct Preparation + Correct Formula + Correct Curing | PROVIDES BEST PERFORMANCE! |
What’s New!

- Abrasion Resistance
- Yarn Treatment
- Total Easy Care: Compatible with No-Iron Finishes
Value Added Benefits

- Total Textile Solutions: www.Cibasc.com
- Quality Assurance Program
- Leading Edge Research & Development
- Product Stewardship
- AATCC Test Methods
- Licensed Mills
- Marketing Support / Literature
- Global Brand Awareness
- Consumer
- Internet: www.Teflon.com
- Formulation Expertise
- Customer Service 1-800-252-997
let life happen™

For more information on DuPont Teflon® Stain Protection:

1-800-252-997

or visit www.DuPont.com/Teflon/StainProtection

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