



# DuPont Surface Protection Solutions

DUPONT™ ZONYL® TO DUPONT™ CAPSTONE™ FLUOROSURFACTANTS  
TRANSITION GUIDE

MAXIMUM PERFORMANCE,  
MINIMUM ENVIRONMENTAL FOOTPRINT\*



*The miracles of science™*

# DuPont™ Capstone™ Product Line Transition Remains on Track

DuPont is committed to successfully transition current products to short-chain Capstone™ fluorosurfactants by the end of 2010. Capstone™ fluorosurfactants are based on short-chain chemistry and provide a step-change reduction in trace impurities below the limit of detection,\* offering the same or better performance as the current products you buy from DuPont without a compromise in fluorine efficiency.

The application table to the right provides suggestions for DuPont™ Capstone™ fluorosurfactants replacements for current DuPont™ Zonyl® fluorosurfactants.

All Zonyl® fluorosurfactants are scheduled for replacement and production will be phased out accordingly. The tables below outline the estimated production phase-out date for each product per fluorosurfactant. Table 1 below outlines the Zonyl® fluorosurfactants scheduled for 2010 phase out and the availability of the Capstone™ replacement products.

Table 2 outlines the Zonyl® fluorosurfactant products that will be available through 2012. Suitable replacement products are currently being developed. We will provide updates when samples are available.

Under the U.S. EPA 2010/15 PFOA Stewardship Program, DuPont has made significant progress by reducing emissions at manufacturing sites worldwide by 98%, and has introduced new technologies that meet or exceed the Program goal of product content reduction by 95%. While DuPont is on track to meet our commitment, there are several products which we will continue to manufacture beyond 2010. DuPont expects to transition these products to Capstone™ fluorosurfactants replacements in 2011 and 2012.

Table 3 outlines the fluorosurfactants that have already been transitioned to their Capstone™ fluorosurfactants replacement.

**Application table**

Application	Capstone™
<b>Adhesives</b>	FS-31, FS-65
<b>Cleaning Solutions</b>	FS-30, FS-31, FS-65, FS-61, FS-63, FS-50, FS-51
<b>Coatings: Latex and Alkyd</b>	
Latex Wetters	FS-61, FS-65, FS-63, FS-30, FS-31
Latex Levelers	FS-61, FS-60, FS-65, FS-63
Latex Anti-block	FS-61, FS-63, FS-67, FS-60
Alkyd Wetters and Levelers	FS-22, FS-3100
Solvent Soluble Additives	FS-22, FS-66
<b>Films</b>	FS-30, FS-31, FS-64, FS-65
<b>Floor Finishes, Polishes &amp; Waxes</b>	FS-60, FS-61, FS-63, FS-64, FS-65, FS-31, FS-50, FS-51
<b>Inks</b>	FS-30, FS-31, FS-65, FS-10
<b>Metal Etching or Plating</b>	FS-10, FS-64, FS-63, FS-61, FS-31, FS-30
<b>Oilfield Applications</b>	
Stimulation Activities	FS-31, FS-30, FS-50, FS-51, FS-65
Aqueous Foaming	FS-50, FS-51, FS-31, FS-30, FS-65

**Table 1**

Zonyl® (Incumbent)	Estimated Phase-out Timing	Capstone™ (Replacement)	Commercial Sampling Availability
FSG	4Q10	FS-22	2Q10
FSJ	Sept-Oct 2010	FS-60	Immediate
FS-610	Sept-Oct 2010	FS-61	Immediate
9361	Sept-Oct 2010	FS-61	Immediate
FSP	Sept-Oct 2010	FS-63	Immediate
FSE	4Q10	FS-64	Late 1Q10
FSA	4Q10	FS-65	Late 1Q10
UR	Sept-Oct 2010	FS-66	Immediate
8952	1Q10	FS-67	Late 1Q10

**Table 2**

Zonyl® (Incumbent)
FS-300
FSH
FSN
FSN-100
FSO
FSO-100
8857A

**Table 3**

Zonyl® (Incumbent)	Capstone™ (Replacement)
1033D	FS-10
FS-500	FS-50
FS-510	FS-51
8867L	FS-81

\*Below the limit of detection for PFOA based on the published analytical method found in the Journal of Chromatography A, 1110 (2006) 117-124.

**Today, footprint reduction is expected of all companies. The challenge—and the opportunity—is to create products and processes that help people have a safer, healthier life, as well as deliver sustainable solutions that help protect the environment.**

**DuPont™ Capstone™ is the result of our commitment to world-class science that creates superior product performance.**

**Q: What are DuPont™ Capstone™ fluorosurfactants and why can't I continue buying the DuPont™ Zonyl® fluorosurfactants I've been buying for years?**

A: DuPont™ Capstone™ fluorosurfactants offer performance that is the same as, or better than, Zonyl® fluorosurfactants while reducing the environmental footprint along the value chains in which we operate. Capstone™ fluorosurfactants are based on short-chain molecules which cannot break down to PFOA in the environment.

**Q: Does this mean I have to reformulate?**

A: It is recommended that customers test the appropriate replacement Capstone™ fluorosurfactants product in their existing formulation to confirm if desired performance is achieved. Capstone™ fluorosurfactants have been designed to meet or exceed product performance currently offered by Zonyl® fluorosurfactants. As a result, minimal requalification efforts are expected. However, every formulation is different and it is the customer's ultimate responsibility to manage individual product formulations.

**Q: When do I need to request a Capstone™ sample?**

A: It is recommended to request the appropriate Capstone™ fluorosurfactants sample consistent with the commercial availability listed in Table 1 as soon as possible. DuPont is using a three- to six-month transition timeline to begin phasing out production of Zonyl® fluorosurfactants once the Capstone™ fluorosurfactants alternative is commercially available. Please check individual product availability with the appropriate DuPont location listed in this guide.

**Q: How will I know which product(s) to request and how do I get a sample ?**

A: The application table in this guide will help you determine which Capstone™ fluorosurfactant is recommended for your respective application(s). After you determine the sample(s) to order, use the contact information in this guide to request the Capstone™ fluorosurfactants samples. You may also contact your direct DuPont sales professional or your authorized distributor sales professional for Capstone™ fluorosurfactants samples.

**Q: DuPont has communicated plans to transition the Zonyl® fluorosurfactant product lines to Capstone™ repellents and surfactants by the end of 2010. So why will Zonyl® FS-300, FSH, FSN, FSN-100, FSO, and FSO-100 still be available after 2010?**

A: While DuPont is on track to meet our commitment by the end of 2010, there are several fluoroethoxylates which DuPont will continue to manufacture beyond 2010. DuPont expects to replace these products with Capstone™ surfactants in 2011 and 2012.



**New DuPont™ Capstone™ fluorosurfactants are aligned with the direction of global regulatory agencies, DuPont customers, and the markets they serve. This includes the U.S. EPA 2010/15 PFOA Stewardship Program.**

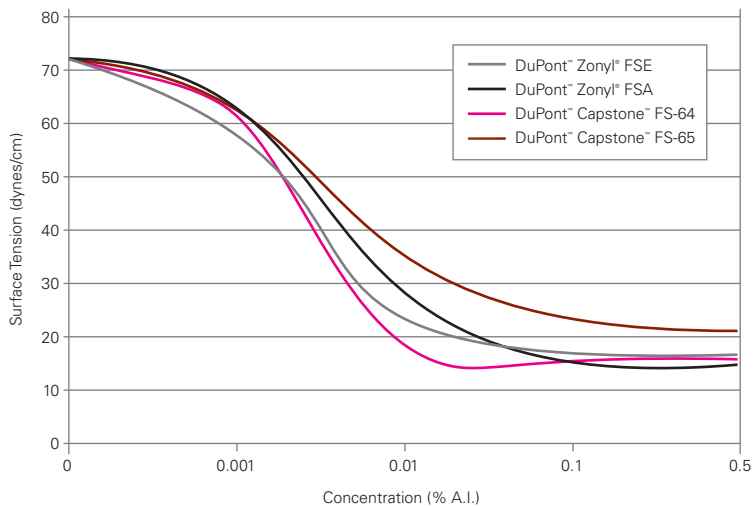
### Performance and VOC-free fluorosurfactants

From seeds to high-performance materials and fuels, DuPont has brought nature and science together in a seamless process with two new products. DuPont™ Capstone™ FS-64, a VOC-free fluorosurfactant, incorporates DuPont Renewably Sourced™ Materials. Compared to traditional DuPont™ Zonyl® fluorosurfactants, Capstone™ FS-64 is a performance-based alternative to Zonyl® FSE, FS-610 and FSJ. Capstone™ FS-64 provides the performance attributes expected from a fluorosurfactant: superior surface tension reduction, excellent leveling characteristics, and stability in extreme conditions.



DuPont™ Capstone™ FS-65 is a performance-based alternative to Zonyl® FSA, FSE, FSO, FSN, and FS-300. Capstone™ FS-65 provides superior performance in wetting and leveling, and does so while meeting the definition for biodegradability of the OECD 301B test method criteria.

### Static Surface Tension in Deionized Water

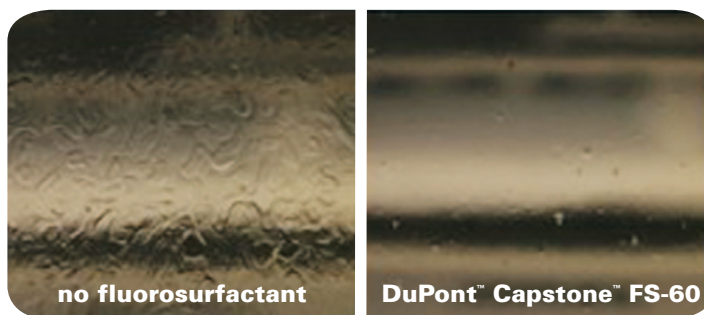


### Performance attributes

Sample ID		Blank	DuPont™ Zonyl® FSE	DuPont™ Zonyl® FS-610	DuPont™ Zonyl® FSA	DuPont™ Capstone™ FS-64	DuPont™ Capstone™ FS-65
Coating	Anti-blocking Rating (0-10)	6.3	6.3	7.3	N/A	8.0	8.0
I&I	Leveling Rating (0-5)	1.2	2.9	3.5	2.9	3.2	3.4

### Superior wetting and leveling attributes

Capstone™ FS-60 and FS-63 fluorosurfactants are direct replacement products for Zonyl® FSJ and FSP. Known for their excellent wetting and leveling properties, the FSJ and FSP alternatives continue to meet or exceed market demands for both performance and functionality. Capstone™ FS-60 and FS-63 are drop-in replacements that have received favorable feedback from the marketplace.



Floor finish without DuPont™ Capstone™ fluorosurfactants has clearly visible orange peel and significant surface defects.

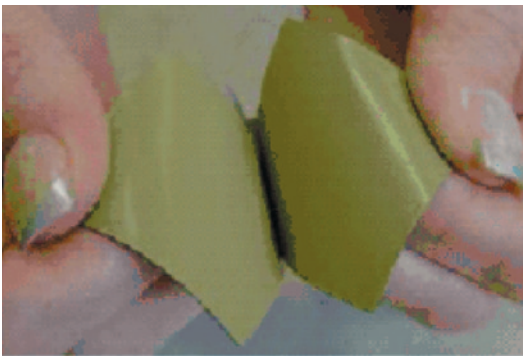
Floor finish dosed at 75 ppm has drastically improved leveling and surface appearance of the floor finish on the vinyl tile.

### **Multifunctional additive for architectural paints and coatings**

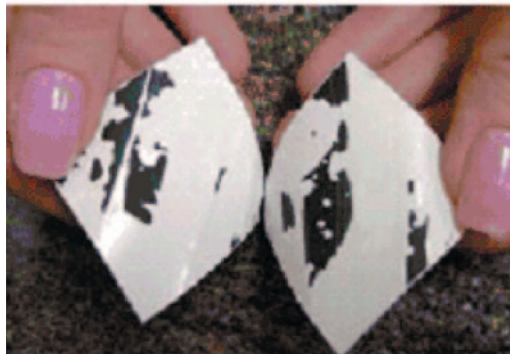
DuPont™ Capstone™ FS-61 is a direct replacement for Zonyl® FS-610 and 9361. This VOC- (volatile organic compound-) free and APEO- (Alkylphenol ethoxylate-) free fluorosurfactant provides excellent anti-blocking, oil repellency, and dirt pick-up resistance properties. Because of its multi-functional benefits, it provides paint and coating formulators the freedom to remove or reduce other additives typically used in these formulations, such as wetting and leveling agents and defoamers.

### **Anti-block Results**

#### **With DuPont™ Capstone™ FS-61 multifunctional fluorosurfactant**



#### **Without DuPont™ Capstone™ FS-61**



For questions regarding technical data,  
commercialization and sampling, contact:

DuPont Americas  
866.828.7009

Asia Pacific  
DuPont (China) R&D Center, Shanghai  
Tel +86.21.2892.1019  
DuPont (Taiwan) Office, Taipei  
Tel +886.2.2514.4412

Europe/Middle East/Africa  
DuPont de Nemours (France)  
Tel +33.1.30.92.8224

LITERATURE  
REF NUMBER

Zon 76



---

**ALFA CHEMICALS LIMITED**

Arc House, Terrace Road South, Binfield, Berkshire RG42 4PZ  
Telephone (01344) 397751 Facsimile (01344) 451400

---

[www.capstone.dupont.com](http://www.capstone.dupont.com)

Copyright © 2010 DuPont. The DuPont Oval Logo, DuPont®, The miracles of science®, Capstone® and Zonyl® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved. K-23574 04/10



*The miracles of science™*