



# Zonyl®

fluoroadditives

DuPont Zonyl® PTFE fluoroadditives for ink, coatings, and overprint varnishes (OPVs) offer a wide range of enhanced performance attributes including:

- Improved abrasion, scratch, and scuff resistance
- Decreased surface tension
- Increased slip, surface lubricity, and block resistance
- Improved chemical resistance
- Improved stain resistance
- Improved scrub resistance

DuPont fluoroadditives are the highest quality products in the industry. DuPont's manufacturing process leads to more consistent products, which translates to more consistency in performance and appearance for our customers' products. There are many grades that have been specifically developed for the coatings and ink industry as displayed in **Table 1**.

## Ink and OPV Product Recommendations

Lithographic: Zonyl® MP 1200 or Zonyl® MP 1400 if FDA approvals are required.

Flexographic: Zonyl® MP 1200 or, if dispersion stability is a problem, Zonyl® MP 1100 or Zonyl® TE-3667N.

Gravure: Zonyl® MP 1400 or, if dispersion stability is a problem, Zonyl® MP 1100 or Zonyl® TE-3667N.

Zonyl® MP 1200 is the optimum particle size for lithographic and flexographic applications. Zonyl® MP 1400 is an FDA-approved fluoroadditive. However, its particle size is larger than Zonyl® MP 1200, so it will be less effective (at the same concentration) as a wear agent and more likely to settle.

Zonyl® MP 1100 has a fine particle size and the most functionality (i.e., acid end groups) of the DuPont fluoroadditives. Therefore, it will be easier to disperse and maintain dispersion stability. Because of its small particle size, it may require higher concentrations than Zonyl® MP 1200 to obtain the same wear performance.

Other products to consider are:

Zonyl® TE-3667N aqueous dispersion for water-based inks and OPVs that require high gloss.

Zonyl® TE-5069AN, which is the smallest particle size of any PTFE fluoroadditive available in the marketplace. If milled adequately, Zonyl® TE-5069AN will allow the highest possible clarity and gloss. If your formulation is water based, consider Zonyl® TE-5070AN, which is the water-based analog of Zonyl® TE-5069AN.

**Table 1**  
**Grind/Particle Size**

Zonyl® Grade	Grind		Typical Particle Size			
	NPIRI*	Hegman	>90%	Average	<90%	Primary
MP 1200	1	8	1	3	8	—
MP 1400	4	7	3	9	20	—
MP 1100	1	8	0.3	3	8	0.20
MP 1600N	1	8	—	7	—	0.20
TE-3667N	1	8	—	Aqueous Dispersion	—	0.20
TE-5069AN	1	8	—	12	—	0.08
TE-5070AN	1	8	—	Aqueous Dispersion	—	0.08
TE-5119A**	1	8	—	10	—	0.40

\* The results shown are expected measurements after adequate milling during typical ink formulation preparation.

\*\* Zonyl® TE-5119A is a fluorinated polyolefin.

## Coating Product Recommendations

Use *Zonyl*<sup>®</sup> MP 1200 when the coating thickness is <5 microns.

Use *Zonyl*<sup>®</sup> MP 1400 when the coating thickness is >5 microns.

If dispersion stability is a problem, a smaller particle size fluoroadditive may be a better choice. However, higher concentrations may be required. (For more information on dispersing fluoro-additives, please refer to DuPont bulletin H-71027).

### For solvent based:

Use *Zonyl*<sup>®</sup> MP 1100 for better wear resistance efficiency.

Use *Zonyl*<sup>®</sup> TE-5069AN for highest gloss and ultimate clarity.

### For anionic water-based systems:

Use *Zonyl*<sup>®</sup> TE-3667N for better wear resistance efficiency, and for when pH >5.

Use *Zonyl*<sup>®</sup> TE-5070AN to provide the highest gloss and clarity, and for when pH <5.

### For cationic water-based coatings:

*Zonyl*<sup>®</sup> TE-3776 has been used in *Electroless Nickel coatings*.

### For coatings that require FDA approval\*:

Use *Zonyl*<sup>®</sup> MP 1400 or *Zonyl*<sup>®</sup> MP 1600.

### For toughness, recoatability, and/or high gloss:

*Zonyl*<sup>®</sup> TE-5119A, which is not PTFE but a fluorinated polyolefin, is recommended. *Zonyl*<sup>®</sup> TE-5119A will significantly outperform PTFE in toughness tests such as the falling sand test. *Zonyl*<sup>®</sup> TE-5119A will afford higher surface energy coatings versus PTFE.

\* For more information please refer to the DuPont *Zonyl*<sup>®</sup> Fluoroadditive FDA bulletin H-52475-1.

## For more information on *Zonyl*<sup>®</sup>:

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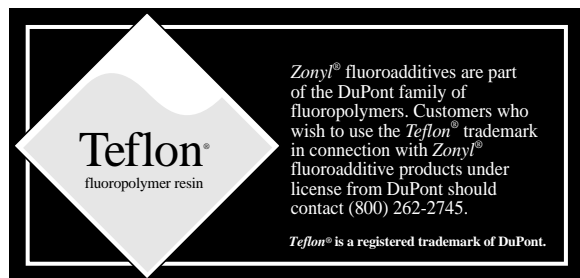
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**CAUTION:** Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102.



**Zonyl**<sup>®</sup>  
Only by DuPont