

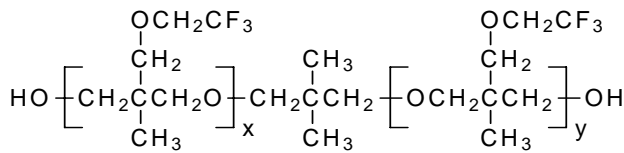


POLYFOX™

the friendly fluorosurfactant

PolyFox™ PF-636, PF-656, PF-6320 & PF-6520

Fluorosurfactant Diols for Improved Flow, Leveling and Surface Appearance in Solvent-Borne Coatings

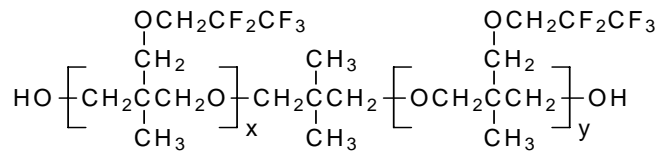


PolyFox PF-636

$x + y \approx 6$

PolyFox PF-6320

$x + y \approx 20$



PolyFox PF-656

$x + y \approx 6$

PolyFox PF-6520

$x + y \approx 20$

GENERAL INFORMATION:

PolyFox PF-636, PF-6320, PF-656, and PF-6520 fluorosurfactants are **environmentally preferred**, 100% solid, solvent-soluble diols based on OMNOVA Solutions' platform of poly(oxetane) polymers. When formulated properly, PolyFox fluorosurfactants may be used to replace telomer-based fluorosurfactants.

KEY FEATURES AND BENEFITS:

- **Environmentally Preferred** – Compared to certain telomer-based and other conventional fluorosurfactants, PolyFox fluorosurfactants have been found to not bioaccumulate, resulting in very **low environmental impact**.
- **Formulation Versatility** – PolyFox fluorosurfactants offer formulators improved flow, leveling, and surface appearance without the typical air entrainment problems associated with conventional fluorosurfactant. PolyFox fluorosurfactants' **perform both as a de-aerator and as a flow and leveling agent** reducing the need for multiple additives.
- **Improved Flow and Leveling** – Incorporation of PolyFox fluorosurfactants into coating formulations results in **improved coating appearance** by reducing surface waviness and orange peel (see Figure 1).
- **Outstanding Air Release and De-Aeration** – Incorporation of PolyFox fluorosurfactants results in dramatically reduced air entrainment, minimizing surface defects such as pinholes and craters (see Figure 2).
- **Near Water White Color** – PolyFox fluorosurfactants are **clear and uniform in appearance** making them particularly well suited for use in clear formulations.
- **Excellent Solubility** – PolyFox fluorosurfactants are completely miscible in essentially all commonly used coatings solvents. These products are **readably miscible** with polymers such as alkyds, polyesters, cellulosics, acrylics, and 100% solid coatings systems.
- **100% Active** – PF-636, PF-656, PF-6320 and PF-6520 are 100% (by weight) active and **do not contain VOCs**.

Table 1. Typical PolyFox Fluorosurfactant Diol Physical Properties*

Property	PolyFox PF-636	PolyFox PF-6320	PolyFox PF-656	PolyFox PF-6520
Appearance	Clear liquid	Clear liquid	Clear liquid	Clear liquid
Viscosity @77°F (cps)	2,300	5,500	1,800	6,900
Color	Colorless to light straw	Colorless to light straw	Colorless to light straw	Colorless to light straw
% Non volatile (Wt)	100	100	100	100
Ionic character	Non-ionic	Non-ionic	Non-ionic	Non-ionic
pH	6.0	6.0 +/-0.5	6.5	7.0 +/-0.5
Specific Gravity (lbs/gal)	10.0	10.2	10.6	10.9
Flash Point (Pensky Martens Closed Cup)	>200°F	>200°F	>200°F	>200°F
Surface Tension (mN/m) (1000 ppm in <i>n</i> -methylpyrrolidinone)	35.5	29.2	30.1	28.0
Solvent miscibility	Ketones, Aromatics, Alkanes, Chlorinated Alkanes, Esters, Alcohols	Ketones, Aromatics, Alkanes, Chlorinated Alkanes, Esters, Alcohols	Ketones, Aromatics, Alkanes, Chlorinated Alkanes, Esters, Alcohols	Ketones, Aromatics, Alkanes, Chlorinated Alkanes, Esters, Alcohols
Solubility in water	Negligible	Negligible	Negligible	Negligible
HLB	6	6	6	6

*Not actual product specifications

An example of a starting formulation for a solvent-borne, 2K acrylic urethane using PolyFox PF-6320 is shown below in Table 2.

Table 2. Spray Applied 2K Acrylic Urethane Coating with Crosslinker

Item	Weight %
Methyl <i>n</i> -amyl ketone	13.64
Dibutyltin dilaurate ¹	0.04
Methyl propyl ketone	16.81
Cellulose acetate butyrate ²	4.21
UV stabilizer ³	2.04
Acrylic resin ⁴	37.77
Aliphatic polyol ⁵	13.67
Defoamer ⁶	0.51
PolyFox PF-6320 (50% in MPK)	0.10
Add and mix the following just before application	
Aliphatic polyisocyanate ⁷	11.21
Total	100

¹MetaCure T-12 (10% in PM Acetate) from Air Products.

²CAB 551.2 from Eastman Chemical Co.

³Tinuvin 328 UV from Ciba Specialty Chemicals Co.

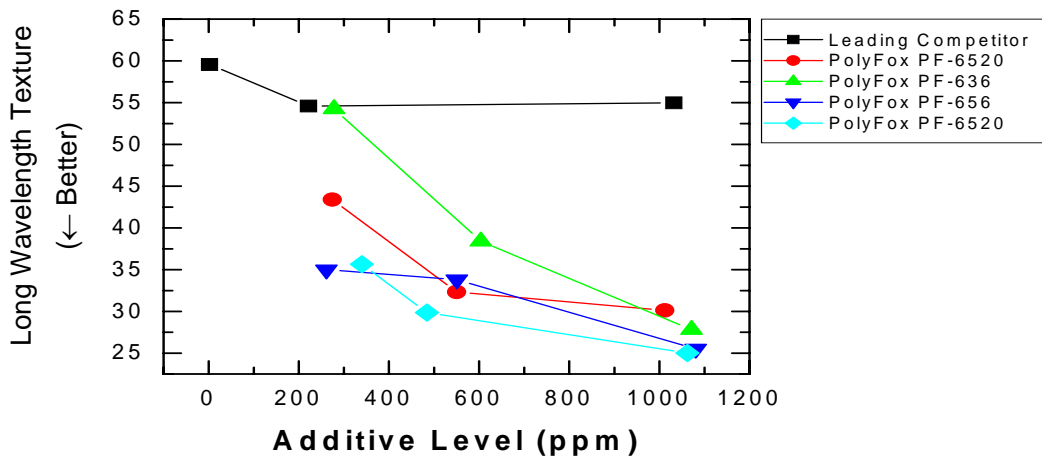
⁴Acrylamac 232-1700 from Eastman Chemical Co.

⁵Acryflow P-120 from Lyondell Chemical Co.

⁶BYK 320 from BYK Additives and Instruments.

⁷Desmodur N 3300 from Bayer BMS.

Figure 1. Surface texture of solvent-borne 2K acrylic urethane coating vs. additive level as measured by long wavelength.*



*BYK-Gardner Wave-Scan.

Figure 2. Surface defect performance improvement in a solvent-borne 2K acrylic urethane with PolyFox fluorosurfactants.



2K Solvent-Borne Acrylic Urethane Coating
0.51 wt% BYK 320
0.025 wt% Leading Competitor



2K Solvent-Borne Acrylic Urethane Coating
0.51 wt% BYK 320
0.053 wt% PolyFox PF-656



2K Solvent-Borne Acrylic Urethane Coating
0.51 wt% BYK 320
0.053 wt% PolyFox PF-6320

Learn More:

Find out how PolyFox fluorochemicals can improve appearance and performance in your coatings. Call Eric Rall at (714) 273-9182 or email eric.rall@omnova.com for samples, literature, or technical assistance or visit our website at www.omnova.com

NOTE:
Although the data supplied above is believed to be accurate, each user is advised to make an independent determination as to whether the described product(s) is/are appropriate for a particular use or application, whether such a use will comply with all applicable laws or regulations, or whether such use will infringe the intellectual property rights of third parties.



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