Product Data Sheet

FLUOROLINK® **P56**

Fluorolink P56 is a water dispersion of an anionic polyurethane based on perfluoropolyether (PFPE) backbone. It has been developed in particular to impart oil- and water repellence and stain release properties to the treated surfaces.

The surfaces treated with Fluorolink P56 show exceptional oil- and water repellence properties and easy cleanability versus common staining agents. The staining agents can be easily removed with water or common cleaning products. The protective treatment does not modify the aesthetic characteristics of the treated surfaces.

Fluorolink P56 can be used as such or in formulations to impart water/oil repellence and stain release properties for the treatment of hard surfaces. Moreover it can be used as an additive for anionic water based resins commonly used for the surface treatment in order to enhance the surface properties.

Fluorolink P56 can be further dilute with water to the proper concentration of use; it is recommended to shake the dispersion before use in order to reduce the possibility of partial settling. Recommended solution concentration is in the range 10-25%ww (referred to polyurethane content).
The amount of Fluorolink P56 applied depends on the type of material and is related to the porosity and roughness of the surface.

In order to obtain a film, a curing agent must be added to the dispersion.

Fluorolink P56 is suitable to be applied using the conventional techniques like dipping, roll and spray.

Recommended curing conditions are :

In order to achieve the best water and oil repellence properties, Fluorolink P56 can be cured with conventional curing agents which can be easily mixed with P56 before use.

Fluorolink P56 can be cured at both room and high temperature using the following classes of curing agents:

Room Temperature Application:

- Polyaziridine: CX-100® (Zeneca) 1-3% on P56 dry
- Epoxy-silane: Dynasylan Glymo (Degussa) 10% on P56 dry
  CoatOSil®1770 (Witco) 1-5% on P56 dry

High Temperature Application: *(Curing Conditions: 140-180°C for 2-15 min.)*

- Melamines: Cymel® 303 (Cytec) 3-5% on P56 dry
- Blocked isocyanates : Bahydur® BL5140 (Bayer) 2-3% on P56 dry

Typical formulations, curing conditions and film properties are as follow:

- ***Low temperature curing***

- *Formulation:*

Fluorolink P56	1kg
Dynasylan Glymo (Degussa)	25g
Imicure EMI-24* (5%wt water solution)	2,5g

*Imicure EMI-24 is a reaction catalyst produced and sold by Air Products and Chemicals.

The formulation is easily prepared by adding the additive into the dispersion and stirring for few minutes. Before applying the coating add catalyst and stirring again.

- *Curing conditions and film properties:*

Tack free time at 24°C (50%RH): 2 -2,5 hours

Stoving cycle : 80°C for 30minutes

- *Film Characteristics*

Substrate	Film thickness	MEK double rubs	Pencils Hardness	Adhesion cross cut %	Θ_{water} (°)	$\Theta_{Hexadecane}$ (°)
Glass	25µm	> 200	3B	100		
	35µm	> 200	3B	100	106	65
Al-QPanels	25µm	200	3B	100		
	35µm	200	3B	100	109	66

- *Chemical Resistance (spot test)*

Rating :

–	**No effect**
+	**Very light shadow**
++	**Light shadow**
+++	**Film surface lightly damaged**
++++	**Film surface strongly damaged**
+++++	**Film destroyed**

		Glass		Al - QPanel	
		25 µn	35 µn	25 µn	35 µn
30’	Methanol	+	+	+	-
	Toluene	-	-	-	-
	Acetone	+	+	-	-
	Etylacetate	+	+	+	+
	Butylacetate	-	-	-	-
24h	HCl 10%	-	-	-	-
	H2SO4 5%	-	-	-	-

➢ ***High temperature curing***

- *Formulation:*

Fluorolink P56	1kg
Cymel 303* (Cytec)	12,5g
p-Toluene sulfonic acid triethylammonium salt (5%wt water solution)	2,5g

*pre-dilute 1:1 by weight with Isopropylalcohol before adding

- *Curing conditions and film properties:*

Tack free time at 24°C (50%RH): 2,5 - 3 hours

Stoving cycle : 180°C for 10 minutes

- *Film Characteristics*

Substrate	Film thickness	MEK double rubs	Pencils Hardness	Adhesion cross cut %	Θwater (°)	ΘHexadecane (°)
Glass	20µm	160	2B	100	107	65
Al-QPanels	20µm	170	2B	100	106	65

- *Chemical Resistance (spot test)*

Rating :

–	**No effect**
+	**Very light shadow**
++	**Light shadow**
+++	**Film surface lightly damaged**
++++	**Film surface strongly damaged**
+++++	**Film destroyed**

		Glass	Al - QPanel
		20 µn	20 µn
30’	Methanol	+	+
	Toluene	-	-
	Acetone	-	-
	Etylacetate	+	+
	Butylacetate	-	-
24h	HCl 10%	-	-
	H2SO4 5%	-	-
	NaOH 5%	-	-

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FLUOROLINK® P56

Typical properties

COMPOSITION	25 % PFPE DERIVATIVE 73 % WATER < 2 % SOLVENT
APPEARANCE	HAZY DISPERSION
pH	7 -9
DILUTABILITY IN WATER	COMPLETE
VISCOSITY (20°C)	10 - 300 Mpa.s

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