



STONE AND CONCRETE  
PROTECTORS



# STONE PROTECTORS LINEPLUS



Lineplus PDM are the classical hydro-oil repellent products for stone, based on long chain perfluorinated technology. They provide a durable and transparent treatment to different kind of stones like natural stones, terra cotta, concrete, bricks.

- Excellent water and oil repellency
- Anti stain properties
- Easy to clean properties
- Durable treatment
- Anti graffiti properties
- Water or solvent based
- UV resistance

PRODUCTS	Description	Solid %	Solvent	Ionic Nature
LINEPLUS PDM 180	(meth)acrylic	24,0 - 26,0	Butyl Acetate	-
LINEPLUS PDM 185	(meth)acrylic	24,0 - 26,0	Butyl Acetate	-
LINEPLUS PDM 282	pure methacrylic	24,0 - 26,0	DPM Metryl D72	-
LINEPLUS PDM 280	pure methacrylic	24,0 - 26,0	Butyl Acetate Tert-Butanol	-
LINEPLUS PDM 210	(meth)acrylic	24,0 - 26,0	Water Tert-Butanol	Cationic
LINEPLUS PDM 211	(meth)acrylic	24,0 - 26,0	Water Hexasol	Cationic
LINEPLUS PDM 230	(meth)acrylic	24,0 - 26,0	Water Tert-Butanol	Anionic
LINEPLUS PDM 240	(meth)acrylic	24,0 - 26,0	Water	Cationic
LINEPLUS PDM 290	(meth)acrylic siloxane	24,0 - 26,0	Water N-Ethyl Pyrrolidone	Cationic

Density g/cm <sup>3</sup> (25 °C)	pH	Dosage	Advantages
0,96	-	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for compact stone.
0,97	-	5 - 10 %	Excellent hydro-oil repellent for natural stone.
0,92	-	5 - 10 %	High Flash point (> 70 °C); excellent hydro-oil repellent for natural stone especially for compact stone. Low odor. Lower evaporation rate for increasing penetration.
0,95	-	5 - 10 %	Higher UV-resistance, supplied by methacrylic structure. Excellent hydro-oil repellent for natural stone especially for compact stone.
1,02	6,0 - 7,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. Preferably store at room temperature because of the presence of tert-butanol that leads to an increase in the viscosity of the product in the range of temperature 10 – 15 °C.
1,06	5,0 - 6,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. If applied in more hands it can give a little wet effect. Low minimum forming temperature (MFFT). No problem of freezing.
1,03	7,0 - 8,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. Preferably store at room temperature because of the presence of tert-butanol that leads to an increase in the viscosity of the product at temperature below 10 - 15°C. It can be formulated inside paint, varnishes, wax to increase hydro-oil repellency. Improve also colour stability of exterior paint (verified with a Xenon test). It can be formulated for wood protection. Stable until pH of 13,5.
1,09	5,0 - 6,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. With long term storage add a biocide to the diluted product. Good antigraffiti properties. If applied in more hands it can give a little wet effect. To increase the penetration of the product into the stone dilute different proportion of water/Isopropanol.
1,09	4,5 – 6,5	5 - 10 %	Excellent hydro-oil repellent with very good perlant effect for natural stone especially for porous stone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. It can be formulated for wood protection. No problem of freezing. Stir before use.

# STONE PROTECTORS HEXAFOR



Hexafor are hydro-oil repellent products for stone, based on short chain perfluorinated technology. They meet the goals of the voluntary U.S. EPA 2010/2015 PFOA Stewardship Program. They supply a durable and transparent surface treatment to stones like natural stones, terra cotta, concrete, bricks.

- Excellent water and oil repellency
- Anti stain properties
- Easy to clean properties
- Durable treatment
- Anti graffiti properties
- Water or solvent based
- UV resistance
- Targeted below LOD for PFOA

PRODUCTS	Description	Solid %	Solvent	Ionic Nature	Density g/cm <sup>3</sup> (25 °C)	pH	Dosage	Advantages
HEXAFOR 6210	(meth)acrylic	24,0 - 26,0	Water Tert-Butanol	Cationic	1,03	6,0 - 7,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. Preferably store at room temperature because of the presence of tert-butanol that leads to an increase in the viscosity of the product at temperature below 10 - 15 °C. Targeted below LOD for PFOA.
HEXAFOR 6211	(meth)acrylic	24,0 - 26,0	Water Hexasol	Cationic	1,05	5,0 - 6,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. If applied in more hands it can give a little wet effect. Low minimum forming temperature (MFFT). No problem of freezing. Targeted below LOD for PFOA.
HEXAFOR 6230	(meth)acrylic	24,0 - 26,0	Water Tert-Butanol	Anionic	1,03	7,0 - 9,0	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. In some case it could give a very little wet effect. Preferably to store at room temperature because of the presence of tert-butanol that leads to an increase in the viscosity of the product at temperature below 10 - 15 °C. It can be formulated inside paint, varnishes, wax to increase hydro-oil repellency. Improve also colour stability of exterior paint (verified with a Xenon test). It can be formulated for wood protection. Stable until pH of 13,5. Targeted below LOD for PFOA.
HEXAFOR 6240	(meth)acrylic	24,0 - 26,0	Water	Cationic	1,08	4,5 - 5,5	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. With long term storage add a biocide to the diluted product. Good antigraffiti properties. If applied in more hands it can give a little wet effect. Targeted below LOD for PFOA.
HEXAFOR 6241	(meth)acrylic	24,0 - 26,0	Water	Cationic	1,08	3,5 - 5,5	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for porous stone. With long term storage add a biocide to the diluted product. Good antigraffiti properties. If applied in more hands it can give a little wet effect. Targeted below LOD for PFOA.
HEXAFOR 6280	pure methacrylic	24,0 - 26,0	Butyl Acetate	-	0,95	-	5 - 10 %	Excellent hydro-oil repellent for natural stone especially for compact stone. Targeted below LOD for PFOA.
HEXAFOR 6282	pure methacrylic	24,0 - 26,0	DPM Metryl D72	-	0,92	-	5 - 10 %	High Flash point (> 70°C); excellent hydro-oil repellent for natural stone especially for compact stone. Low odor. Lower evaporation rate for increasing penetration. Targeted below LOD for PFOA.
HEXAFOR 6380	pure methacrylic	24,0 - 26,0	Butyl Acetate	-	0,95	-	5 - 10 %	Excellent hydro-oil repellent for natural stone. Higher Tg (Glass transition temperature) in comparison to the others solvent based products. Indicated especially for compact stone. Targeted below LOD for PFOA.
HEXAFOR 6390	(meth)acrylic silane	24,0 - 26,0	Water	Cationic	1,08	4,5 - 6,5	5 - 10 %	Excellent hydro-oil repellent with very good perlant effect for natural stone especially for porous stone like limestone and sandstone. To give a wet effect to the treated stone put together cationic/nonionic high gloss water based acrylic polymer. It can be formulated for wood protection. No problem of freezing. Silane monomers into the polymer skeleton increase the adhesion of the dried coating to limestone, concrete... Stir before use. Targeted below LOD for PFOA.
HEXAFOR S40	(meth)acrylic siloxane	30,0 - 33,0	Water	Cationic	1,04	4,5 - 6,5	15 - 35 %	Water emulsion of siloxane fluorinated polymer for porous stone materials for building construction market. With its good penetration can be used as a water repellent agent and anti-stain especially on concrete and masonry surfaces. Siloxane moieties increase the adhesion of the polymer to these substrates. Targeted below LOD for PFOA.



# ANTI STAIN PROPERTIES TEST SANDSTONE

Each product (diluted to 10% in water) was applied to sandstone, limestone, marble, concrete and porcelain and let to dry for 48 hours. Water, olive oil, coffee, wine and vinegar were applied on the treated surfaces. After 24 hours, the liquid were removed from the substrates and the stains left on the stones were evaluated. The rating is expressed with a numerical value from 1 (big stain) to 5 (no stain).

# ANTI STAIN PROPERTIES TEST LIMESTONE

## Products' performances on sandstone.

Results are shown as a numerical value from 1 (the worst) to 5 (the best).



PRODUCTS	WATER	OIL	COFFEE	WINE	VINEGAR
LINEPLUS PDM 210	5	5	4	4	3
LINEPLUS PDM 211	5	5	4	4	4
LINEPLUS PDM 230	5	5	4	4	3
LINEPLUS PDM 240	5	5	5	4	3
LINEPLUS PDM 290	5	5	4	4	4
LINEPLUS PDM 185	4	4	4	4	4
LINEPLUS PDM 180	4	5	4	3	3
LINEPLUS PDM 282	5	4	4	4	3
LINEPLUS PDM 280	5	4	4	3	3
HEXAFOR 6210	5	5	4	4	4
HEXAFOR 6211	5	5	4	4	3
HEXAFOR 6230	4	4	3	3	3
HEXAFOR 6240	5	5	4	4	4
HEXAFOR 6241	5	3	2	3	3
HEXAFOR 6390	5	2	3	3	3
HEXAFOR 6280	3	4	3	2	2
HEXAFOR 6282	5	4	3	3	3
HEXAFOR 6380	5	5	4	4	3
HEXAFOR S 40	5	3	3	2	2

## Products' performances on limestone.

Results are shown as a numerical value from 1 (the worst) to 5 (the best).



PRODUCTS	WATER	OIL	COFFEE	WINE	VINEGAR
LINEPLUS PDM 210	5	5	4	4	3
LINEPLUS PDM 211	5	5	5	4	4
LINEPLUS PDM 230	5	4	4	4	3
LINEPLUS PDM 240	5	5	4	3	3
LINEPLUS PDM 290	5	5	5	3	3
LINEPLUS PDM 185	5	5	5	5	3
LINEPLUS PDM 180	4	4	4	3	3
LINEPLUS PDM 282	4	5	4	3	3
LINEPLUS PDM 280	4	5	3	3	3
HEXAFOR 6210	5	5	4	5	5
HEXAFOR 6211	5	5	4	5	5
HEXAFOR 6230	4	4	3	4	4
HEXAFOR 6240	5	4	4	5	5
HEXAFOR 6241	4	5	2	4	3
HEXAFOR 6390	4	4	4	4	3
HEXAFOR 6280	3	3	2	3	3
HEXAFOR 6282	4	4	3	5	5
HEXAFOR 6380	5	5	4	5	5
HEXAFOR S 40	4	3	2	2	2

# ANTI STAIN PROPERTIES TEST MARBLE

## Products' performances on marble.

Results are shown as a numerical value from 1 (the worst) to 5 (the best).



PRODUCTS	WATER	OIL	COFFEE	WINE	VINEGAR
LINEPLUS PDM 210	5	4	4	3	3
LINEPLUS PDM 211	5	5	5	3	3
LINEPLUS PDM 230	5	4	4	3	3
LINEPLUS PDM 240	5	5	4	4	3
LINEPLUS PDM 290	5	5	4	4	3
LINEPLUS PDM 185	4	5	3	3	3
LINEPLUS PDM 180	5	5	4	4	4
LINEPLUS PDM 282	5	5	4	3	3
LINEPLUS PDM 280	5	5	4	3	3
HEXAFOR 6210	5	5	4	4	4
HEXAFOR 6211	5	4	4	4	3
HEXAFOR 6230	4	3	3	2	2
HEXAFOR 6240	5	4	4	4	3
HEXAFOR 6241	5	5	3	3	3
HEXAFOR 6390	4	5	4	3	3
HEXAFOR 6280	4	3	3	3	3
HEXAFOR 6282	5	4	3	3	3
HEXAFOR 6380	5	5	4	4	3
HEXAFOR S 40	5	4	3	3	3

# ANTI STAIN PROPERTIES TEST CONCRETE

## Products' performances on concrete.

Results are shown as a numerical value from 1 (the worst) to 5 (the best).



PRODUCTS	WATER	OIL	COFFEE	WINE	VINEGAR
LINEPLUS PDM 210	4	5	2	2	2
LINEPLUS PDM 211	5	5	3	3	2
LINEPLUS PDM 230	4	5	3	3	3
LINEPLUS PDM 240	4	5	2	3	2
LINEPLUS PDM 290	5	5	4	3	3
LINEPLUS PDM 185	4	5	3	2	2
LINEPLUS PDM 180	4	5	3	3	2
LINEPLUS PDM 282	4	5	3	3	2
LINEPLUS PDM 280	4	5	3	3	2
HEXAFOR 6210	5	4	4	4	4
HEXAFOR 6211	5	4	4	3	3
HEXAFOR 6230	4	4	3	4	3
HEXAFOR 6240	5	4	4	3	3
HEXAFOR 6241	5	4	3	2	2
HEXAFOR 6390	5	5	4	4	3
HEXAFOR 6280	4	3	3	3	3
HEXAFOR 6282	4	3	3	3	3
HEXAFOR 6380	5	4	4	4	3
HEXAFOR S 40	5	4	4	3	3

# ANTI STAIN PROPERTIES TEST PORCELAIN

## Products' performances on porcelain.

Results are shown as a numerical value from 1 (the worst) to 5 (the best).



PRODUCTS	WATER	OIL	COFFEE	WINE	VINEGAR
LINEPLUS PDM 185	5	5	4	4	4
LINEPLUS PDM 180	5	5	4	4	3
LINEPLUS PDM 282	5	5	4	4	3
LINEPLUS PDM 280	5	5	3	4	3
HEXAFOR 6280	5	5	3	2	2
HEXAFOR 6282	5	5	4	4	4
HEXAFOR 6380	5	5	3	3	3

# SOLUBILITY TEST IN SOLVENTS

## Solubility test in Solvents

PRODUCTS	BUTYL ACETATE	EXXSOL D40	EXXSOL D40	ISOPAR H	DPM	TMP	TPNB	
LINEPLUS PDM 185	Soluble clear colourless solution	Soluble clear colourless solution	Insoluble gel precipitate	Insoluble gel precipitate	Insoluble a foam is formed, it incorporate the polymer	Insoluble a foam is formed, it incorporate the polymer	Insoluble a foam is formed, it incorporate the polymer	
LINEPLUS PDM 180					Soluble clear colourless solution	Soluble clear colourless solution	Soluble clear colourless solution	
LINEPLUS PDM 282					Soluble clear colourless solution	Insoluble a foam is formed, it incorporate the polymer	Insoluble a foam is formed, it incorporate the polymer	Insoluble a foam is formed, it incorporate the polymer
LINEPLUS PDM 280								
HEXAFOR 6280						Soluble clear colourless solution	Soluble clear colourless solution	Soluble clear colourless solution
HEXAFOR 6282								
HEXAFOR 6380		Insoluble gel precipitate	Insoluble gel precipitate	Insoluble gel precipitate				

PRODUCTS	TOLUENE	XILENE	IPA	ACETONE	DBE-4	WHITE SPIRIT	N - HEPTANE	
LINEPLUS PDM 185	Soluble solution white and veiled, unstable the white precipitate is formed	Soluble solution white and veiled, unstable the white precipitate is formed	Soluble solution white and veiled, unstable the white precipitate is formed	Insoluble gel precipitate	Insoluble a foam is formed, it incorporate the polymer	Insoluble gel precipitate	Soluble clear colourless solution	
LINEPLUS PDM 180	Soluble clear colourless solution	Soluble clear colourless solution	Soluble clear colourless solution	Soluble clear colourless solution		Soluble clear colourless solution		
LINEPLUS PDM 282			Insoluble a foam is formed, it incorporate the polymer	Soluble solution white and veiled, unstable the white precipitate is formed, it can easily go back into solution				
LINEPLUS PDM 280								
HEXAFOR 6280						Soluble clear colourless solution		Soluble clear colourless solution
HEXAFOR 6282								
HEXAFOR 6380			Insoluble gel precipitate	Insoluble gel precipitate	Soluble solution white and veiled, unstable the white precipitate is formed, it can easily go back into solution		Insoluble	Insoluble gel precipitate



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