

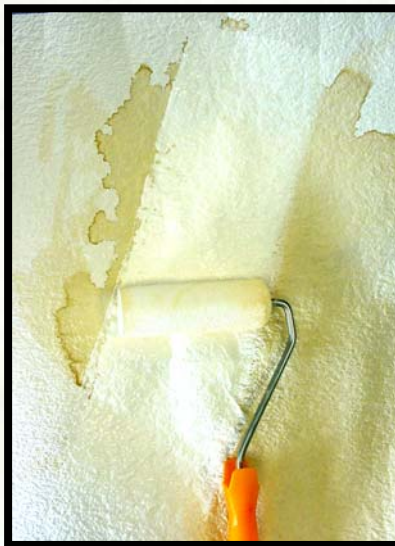


**INTERPOLYMER**

Creative Polymer Solutions

# **SYNTRAN<sup>®</sup> Cationic Acrylic Copolymers**

*For Waterborne Stain-Blocking Paints and Lacquers*



- 
- ***Exceptional Stain Blocking Performance:***  
*Nicotine Stains, Wood Extractives, Graffiti, etc.*
  - ***Environmentally Friendly***
  - ***Excellent Adhesion***
  - ***High Solid Content***
-



# Stain Blocking Application Fields



Nicotine Stains



Wood



Graffiti



Water Stains



Cork



## SYNTRAN® Cationic Acrylic Copolymers

For Waterborne Stain-Blocking Paints and Lacquers



INTERPOLYMER is an industry leading manufacturer of water-based polymers for a wide variety of markets. A new product line is now available for use as functional binders in specialty paints.

INTERPOLYMER has designed aqueous SYNTRAN acrylic, cationic polymer dispersions that can be used in high quality primers, which block difficult stains from bleeding through to the surface.

SYNTRAN polymer dispersions provide environmentally friendly, cost-effective, quick and permanent solutions to a variety of severe staining problems.

### Fields of Application

- Waterborne Primers with Universal Stain-Blocking Performance
- Waterborne Primers and Topcoats for Graffiti Blocking
- Waterborne Tannin Blocking Wood Coatings

### Typical Physical Properties

SYNTRAN	Solids [wt.-%]	Viscosity [mPas]	pH	MFT	Remarks
6301	35	300	6.0	<10°C	
FX30-20 *	35	300	6.0	22°C	<ul style="list-style-type: none"> <li>• Increased hardness</li> <li>• Improved soiling and scratch resistance</li> </ul>

\* Development product

#### Disclaimer:

Due to its cationic nature, formulations based on SYNTRAN cationic polymers should not be mixed with paints based on anionic binders. SYNTRAN cationic polymers are not stable at alkaline pH.

SYNTRAN 6301 and FX30-20 both contain formic acid. Formulated coatings should not be used on metal or other surfaces subject to acid corrosion as the coating is drying. After curing, the coating is safe for all surfaces.



## **Features & Benefits**

- √ Excellent, permanent blocking of tannin and other colored wood extractives.
- √ Highly efficient, permanent blocking of difficult stains, such as:
  - Nicotine
  - Marking pens
  - Water colors
  - Ball-point pens
  - Various food stains
  - Fat and cooking oil
- √ Good performance under critical conditions of high humidity and high temperature.
- √ Suitable for paints for the renovation of heavily used, stained locations like restaurants, kitchens, bath rooms or public rooms.
- √ Easily formulated into highly opaque coatings; repair difficult stain damage with one coat.
- √ Reactive pigments (such as zinc oxide) are not required.
- √ Good adhesion to a wide variety of substrates, such as:
  - Wood
  - Gypsum board
  - Cork
  - Mineral surfaces
  - Wall paper
- √ Coatings can be formulated with high solids content.
- √ Low minimum film forming temperature allowing low VOC formulations.
- √ Suitable for pigmented and clear coatings.
- √ Water based, environmentally friendly, low odor coatings.
- √ SYNTRAN FX30-20 coatings are readily sandable and offer excellent dirt pickup resistance.
- √ Excellent cost performance and user convenience versus solvent based coatings.





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## TECHNICAL INFORMATION

### SYNTRAN® 6301

**SYNTRAN 6301** is a water-based, cationic acrylic copolymer dispersion.

**SYNTRAN 6301** is recommended for stain blocking paints and primers. It has excellent performance in blocking nicotine and water stains. It is also suitable for stain blocking primers for wood and cork.

Formulations based on **SYNTRAN 6301** have the following properties:

- Excellent, universal stain blocking properties
- Excellent adhesion to a wide variety of substrates
- Very good blocking of wood extractives
- Very good nicotine barrier properties
- Reactive pigments are not required
- APE and co-solvent free

### Typical Physical Properties

Appearance	turbid, yellowish
Solids	35%
pH at 22°C	6
MFT	< 10°C
Viscosity Brookfield	300 cps
Density at 20°C	1.05 g/cm <sup>3</sup>
Heat stability at 52°C	unchanged after 30 days
Freeze thaw stability	unchanged after 3 cycles





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## Storage

**SYNTRAN 6301** is adequately protected against microbial attack as supplied, but not when it is diluted with water and other additives. Formulations containing **SYNTRAN 6301** require preservatives.

**SYNTRAN 6301** can be stored in original sealed containers and properly monitored storage tanks at ambient temperature for at least 6 months.

## Safety

Please refer to the Material Safety Data Sheet.

## Handling

All contact with the eyes and prolonged contact with the skin should be avoided.

Safety glasses must be worn when handling this product in its concentrated form.



## TECHNICAL INFORMATION

### SYNTRAN® FX30-20

#### Developmental Product

**SYNTRAN FX30-20** is a cationic, aqueous acrylic copolymer dispersion.

**SYNTRAN FX30-20** is suitable for stain blocking wood primers. It also performs very well in nicotine barrier coatings.

Formulations based on **SYNTRAN FX30-20** have the following properties:

- Excellent, universal stain blocking properties
- Excellent dirt pickup resistance
- Excellent adhesion to a wide variety of substrates
- Very good blocking of wood extractives
- Very good nicotine barrier properties
- Reduces blistering and adhesion problems on certain types of wood
- Coatings are readily sandable
- APE free

### Typical Physical Properties

Appearance	milky, yellowish-white
Solids	35%
pH at 22°C	6.0
MFT	20 ± 3°C
Viscosity Brookfield	300 cps
Density at 20°C	1.06 g/cm <sup>3</sup>
Heat stability at 52°C	unchanged after 30 days
Freeze thaw stability	unchanged after 3 cycles



## Storage

**SYNTRAN FX30-20** is adequately protected against microbial attack as supplied, but not when it is diluted with water and other additives. Formulations containing **SYNTRAN FX30-20** require preservatives.

**SYNTRAN FX30-20** can be stored in original sealed containers and properly monitored storage tanks at ambient temperature for at least 6 months.

## Safety

Please refer to the Material Safety Data Sheet.

## Handling

All contact with the eyes and prolonged contact with the skin should be avoided.

Safety glasses must be worn when handling this product in its concentrated form.





## ***Starting Point Formulations***

### **SYNTRAN® 6301**

F-31-002-03  
Total 28 wt.%

Clear Primer Formulation

F-31-001-01  
Total 44 wt.%

Pigmented Primer Formulation based on  
BaSO<sub>4</sub> as filler  
PVC = 25%

F-31-003-02  
Total 60 wt.%

Pigmented Primer/Topcoat Formulation  
based on BaSO<sub>4</sub> as filler  
PVC = 40%      Excellent Coverage

F-31-004-01  
Total 60 wt.%

Pigmented Primer/Topcoat Formulation  
based on Kaolin and Talc as filler  
PVC = 54%      Excellent Coverage

### **SYNTRAN® FX30-20**

F-43-048-01  
Total 27 wt.%

Clear Tannin Blocking or Graffiti Blocking  
Coating Formulation

*Formulations do not require reactive pigments*

**CLEAR PRIMER FORMULATION BASED ON SYNTRAN® 6301**

Formulation F-31-002-03 28% N.V.

Prevents bleeding of water-soluble stains: nicotine stains, wood extractives. Excellent adhesion to a variety of substrates.

*Mix in Order Listed:*

	<b><u>Amount (g)</u></b>	
Water	19.6	
<b>SYNTRAN 6301 @ 35%<sup>1</sup></b>	75.0	Cationic, acrylic, stain-blocking binder
Byk-333 <sup>2</sup>	0.2	Substrate wetting agent
AGITAN 299 <sup>3</sup>	0.7	Defoamer
Borchigel PW25 <sup>4</sup>	4.5	Thickener
Total:	<u>100.0</u>	

**Preparation:**

Add all ingredients in listed order and mix in a dissolver for ca. 20 minutes.  
pH: ca. 5.5

<sup>1</sup> **INTERPOLYMER**

<sup>2</sup> BYK-Chemie USA, Wallingford, Tel: 203-265-2086

<sup>3</sup> Ultra Additives, Bloomfield, Tel: 973-279-1306.

<sup>4</sup> Lanxess Corp., Pittsburg, Tel: 800-526-9377, e-mail: borchers-info@lanxess.com

**PIGMENTED PRIMER FORMULATION BASED ON SYNTRAN® 6301**

Formulation F-31-001-01 44% N.V.

Universal Stain Blocking Primer: Nicotine stains, wood extractives. Specially recommended to block nicotine stains.

*Mix in Order Listed:*

	<u>Amount (g)</u>	
<u>Grind:</u>		
Water	20.0	
Surfynol 104 E <sup>1</sup>	0.7	Wetting agent
Surfynol GA <sup>1</sup>	0.4	Wetting agent
Kronos 2190 <sup>2</sup>	10.0	Pigment
Sachtleben Micro <sup>3</sup>	12.5	Filler
Aerosil 200 <sup>4</sup>	0.9	Thickener
<u>Let down:</u>		
<b>SYNTRAN 6301 @ 35%</b> <sup>5</sup>	52.0	Cationic, acrylic binder
Rheolate 255 <sup>6</sup>	0.8	Thickener
Byk 025 <sup>7</sup>	0.4	Defoamer
Byk 346 <sup>7</sup>	0.8	Wetting agent
Wet KL 245 <sup>8</sup>	0.9	Wetting agent
Water	0.8	
Borchigel PW25 <sup>9</sup>	3.2	Thickener
Total	103.4	

**Preparation:**

Grind: Add all ingredients in listed order and grind at ca. 8 m/s for 20 minutes, until a fineness of grind < 10 µm. Let down: Add under stirring and mix for ca. 20 minutes. Then mix grind and let down for 10 minutes at ca. 8m/s.

<sup>1</sup> Surfynol: Air Products.

<sup>2</sup> Kronos Inc., Cranbury, Tel: 609-860-6200.

<sup>3</sup> Sachtleben Corp., White Plains, Tel: 914-539-4068.

<sup>4</sup> Aerosil: Degussa.

<sup>5</sup> **INTERPOLYMER.**

<sup>6</sup> Elementis Specialties, Highstown, Tel: 609-443-2000.

<sup>7</sup> Byk: Chemie USA, Wallingford, Tel: 203-265-2086.

<sup>8</sup> Tego-Degussa Goldschmidt, Hopewell, Tel: 800-446-1809.

<sup>9</sup> Lanxess Corp., Pittsburg, Tel: 800-526-9377, e-mail:borchers-info@lanxess.com .



**PIGMENTED PRIMER/TOPCOAT FORMULATION BASED ON SYNTRAN® 6301**

Formulation F-31-003-02 60% N.V.

Excellent universal stain blocking performance. Specially recommended to block wood extractives, nicotine stains, graffiti, etc. High solids, excellent coverage.  
 “2 in 1”: Primer + Topcoat.

*Mix in Order Listed:*

<u>Grind:</u>	<u>Amount (g)</u>	
Water	6.4	
EFKA-4580 <sup>1</sup>	5.3	Wetting agent
Kronos 2190 <sup>2</sup>	20.0	Pigment
Sachtleben Micro <sup>3</sup>	20.0	Filler
EFKA-2526 <sup>1</sup>	0.3	Defoamer
<i>Let down:</i>		
<b>SYNTRAN 6301 @ 35%</b> <sup>4</sup>	43.6	Cationic, acrylic binder
Rheolate 255 <sup>5</sup>	3.8	Thickener
EFKA-2526 <sup>1</sup>	0.6	Defoamer
Total	<u>100.0</u>	

**Preparation:**

Grind: Add all ingredients in listed order and grind for ca. 12-14 m/s for 30-60 minutes, until a fineness of grind < 10 µm. Let down: Add all ingredients in listed order under stirring and mix for 5 minutes at ca. 10 m/s. Then mix grind and let down for 5 minutes at ca. 8 m/s.

<sup>1</sup> EFKA-Ciba Specialty Chemicals, Newport, Tel: 800-355-2422.

<sup>2</sup> Kronos Inc., Cranbury, Tel: 609-860-6200.

<sup>3</sup> Sachtleben Corp., White Plains, Tel: 914-539-4068.

<sup>4</sup> **INTERPOLYMER.**
<sup>5</sup> Elementis Specialties, Hightstown, Tel: 609-443-2000.

**PIGMENTED PRIMER/TOPCOAT FORMULATION BASED ON SYNTRAN® 6301**

Formulation F-31-004-01 60% N.V.

Universal Stain Blocking Paint. Wood Extractives, Nicotine Stains, etc. High solids. Excellent Coverage. "2 in 1": Primer + Topcoat.

*Mix in Order Listed:*

	<u>Amount (g)</u>	
<u>Grind:</u>		
Water	14.9	
EFKA-4580 <sup>1</sup>	5.1	Wetting agent
Kronos 2190 <sup>2</sup>	21.5	Pigment
Huber 70 C <sup>3</sup>	13.8	Kaolin filler
Steabright <sup>4</sup>	6.5	Talc filler
EFKA-2526 <sup>1</sup>	0.2	Defoamer
EFKA-2526 <sup>1</sup>	0.3	Defoamer (add after grinding)
<u>Let down:</u>		
<b>SYNTRAN 6301 @ 35%</b> <sup>5</sup>	35.0	Cationic, acrylic binder
EFKA-2526 <sup>1</sup>	0.5	Defoamer
Rheolate 255 <sup>6</sup>	2.2	Thickener
Water		
Total	100.0	

**Preparation:**

Grind: Add all ingredients in listed order and grind for ca. 60 minutes, until a fineness of grind < 15 µm. Let down: Add all ingredients in listed order under stirring and mix for 10 minutes at ca. 10 m/s. Then mix grind and let down for 10 minutes at ca. 10 m/s.

- <sup>1</sup> EFKA-Ciba Specialty Chemicals, Newport, Tel: 800-355-2422.
- <sup>2</sup> Kronos Inc., Cranbury, Tel: 609-860-6200.
- <sup>3</sup> Huber Engineered Materials, Atlanta, Tel: 678-247-7300.
- <sup>4</sup> Luzenac America, Centennial, Tel: 303-643-0400.
- <sup>5</sup> **INTERPOLYMER.**
- <sup>6</sup> Elementis Specialties, Hightstown, Tel: 609-443-2000.



## **NEW FROM INTERPOLYMER**

### **TANNIN BLOCKING COATING BASED ON SYNTRAN® FX30-20**

**Formulation F-43-048-01** 25% N.V.

The **SYNTRAN FX30-20** tannin blocking coating formulation is designed to fill and seal wood pores completely and to prevent tannin stains in new wood before applying a topcoat. This **quick-drying** sealer formulation **sands easily** to a smooth surface for even topcoating.

**SYNTRAN FX30-20** contains formic acid. The sealer, tannin blocking coating should not be used on metal surfaces and should be allowed to completely dry before anionic topcoats are applied.

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*Mix in Order Listed:*

	<u>Amount (g)</u>
Water	27.1
Citric acid	0.5
Dipropylene Glycol Methyl Ether	1.0
<b>SYNTRAN® FX30-20 @ 35% N.V.</b>	71.4
Bactericide	Q.S.
Defoamer	Q.S.
	-----
Total:	100.0

#### Procedure

- Using good agitation add ingredients in the order listed.
- Mix until a homogenous solution results (20-30 minutes).





## **NEW FROM INTERPOLYMER**

# **SYNTRAN<sup>®</sup> FX30-20 TANNIN BLOCKING COATING**

## **LABORATORY REPORT**

Test Results on Maple and White Oak

<b>TEST SAMPLES</b>	<b><i>Syntran FX30-20 Formulation F-43-048-01 Base Coat</i></b>	<b><i>Leading National Brand Polyurethane Base Coat</i></b>
60° SPECULAR GLOSS ASTM D523	58	50
DRY TIME ASTM D1640	48 minutes	> 2 hours
ADHESION ASTM D3359	Excellent	Excellent
CRAZING ON GLASS	None	None
SANDING PROPERTIES (100 grit sanding disk) MFMA Test Methods	Excellent	N/A
FREEZE-THAW RESISTANCE	Pass 3 cycles	Pass 3 cycles
SOLIDS ASTM D1644	25%	32%
pH ASTM E70-77	5.2	4.2
TANNIN REACTION (discoloration)	None	None

***NEW FROM INTERPOLYMER*****SYNTRAN<sup>®</sup> FX30-20  
TANNIN BLOCKING COATING****COMPATIBILITY TEST**

<b>TOP COAT TEST SAMPLES</b>	<b>SYNTRAN FX30-20 Formulation F-43-048-01 Base Coat</b>	<b>Leading National Brand Polyurethane Base Coat</b>
<b>F-43-045-01 SYNTRAN 6110 and 6120</b>	Excellent	Excellent
Minwax Polyurethane for Floors	Excellent	Excellent
Minwax Polycrylic	Excellent	Excellent
Olympic Polyurethane	Excellent	Excellent



## SYNTRAN<sup>®</sup> CATIONIC TECHNOLOGY

### Formulation and Compatibility Guide

Instability at pH > 7

Recommended pH of formulation: 5-6

Incompatibility with:

- Negatively charged polymer binders
- Negatively charged wetting agents and dispersants
- Alkaline thickeners
- CaCO<sub>3</sub> fillers





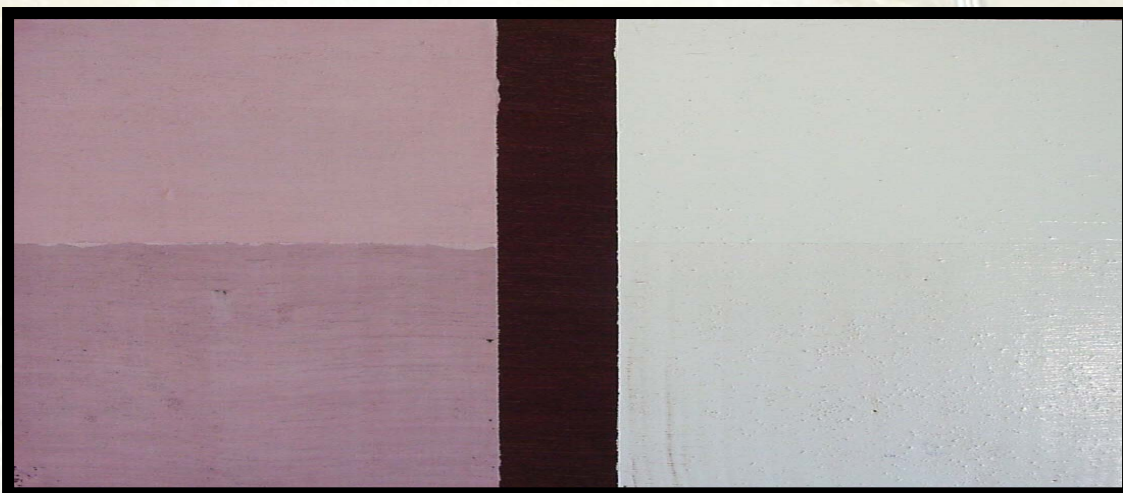
## *Selected Application Test Results*

### *(1) Nicotine Stain Blocking*



Top: Stained substrate covered with a conventional water-based paint. Bottom: As above, but with an additional applied, non-pigmented primer based on SYNTRAN 6301. For accelerated staining, samples were exposed to 40°C and 100% rel. humidity for two days.

### *(2) Blocking of a Water-Based Wood Stain*

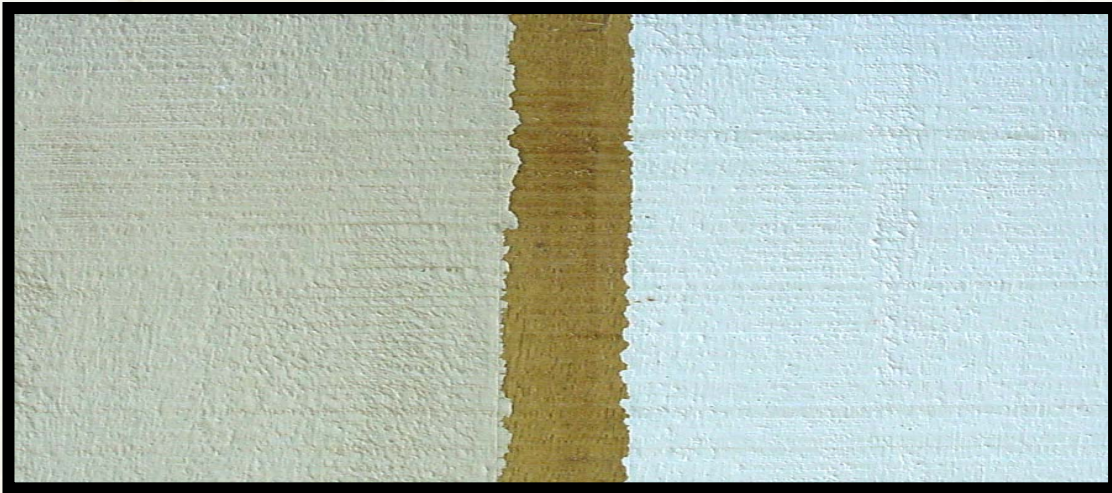


Left: Stained wood substrate covered with a non-specialized, white, water-based primer and topcoat system. Severe bleeding is observed. Right: Same as on left side, but using a white stain-blocking primer based on SYNTRAN 6301. Here, even the primer shows no discoloration. (Note: In the lower parts of the photo, the substrate was covered with the primers only, whereas in the upper parts the primer/topcoat systems were applied).



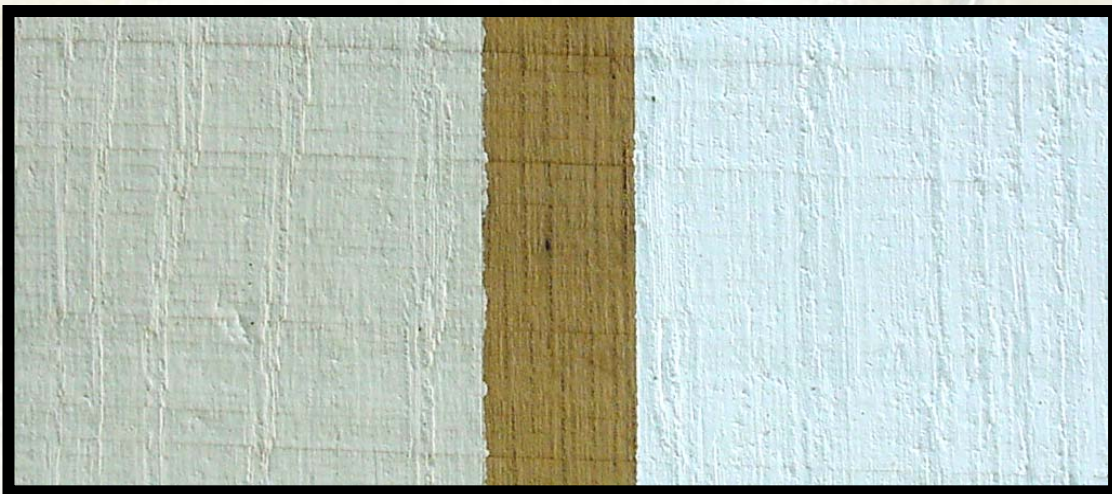


### *(3) Tannin Stain Blocking on Framire Wood*



Left: Application of a white, non-specialized, water-based primer. The yellow discoloration indicates severe tannin bleeding. Right: Application of a white stain-blocking primer based on SYNTRAN 6301. Even when applied in a single coat, discoloration due to wood extractives can be prevented.

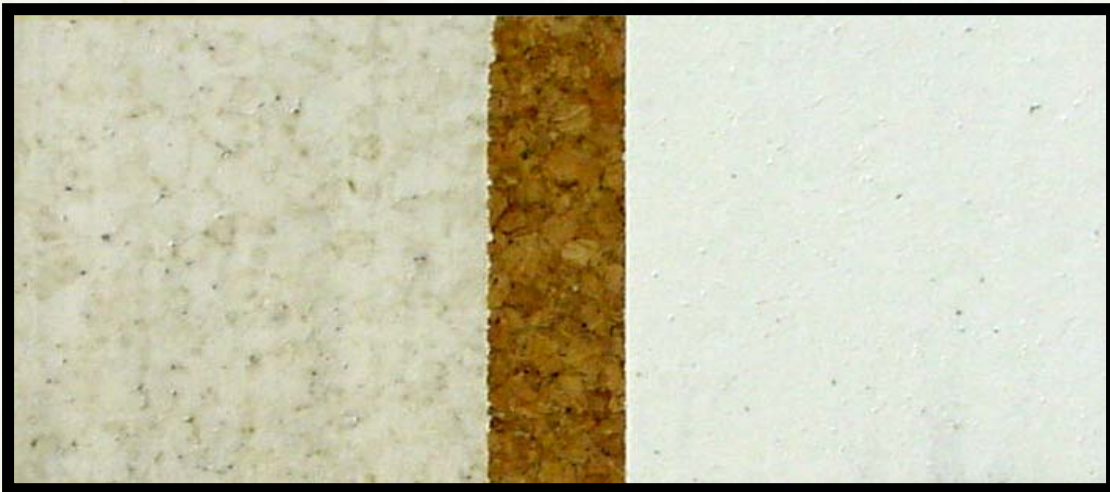
### *(4) Tannin Stain Blocking on White Oak*



Left: Application of a white, non-specialized, water-based primer. The yellow-brownish discoloration indicates severe tannin bleeding. Right: Application of a white stain-blocking primer based on SYNTRAN 6301. Even when applied in a single coat, discoloration due to wood extractives can be prevented.



## (5) Stain Blocking on Cork



Left: Application of a white, non-specialized, water-based primer. The spotted, brownish discoloration indicates severe bleeding of extractives. Right: Application of a white stain-blocking primer based on SYNTRAN 6301. Even when applied in a single coat, discoloration due to extractives can be prevented.

## (6) Graffiti Stain Blocking



Left: Substrate stained with (from top to bottom) graffiti from red text marker, yellow text marker, black ball-point pen and blue OHP-pen. Middle: Graffiti stained substrate after application of a conventional, water-based, white paint. Severe bleeding is observed. Right: Same as in the middle, but with an additionally applied, non-pigmented stain blocking primer layer based on SYNTRAN 6301.





# INTERPOLYMER

Creative Polymer Solutions



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