

# AW 90CX SYNEXIL<sup>®</sup>

acrylic dispersion for transparent  
and pigmented wood coatings





synthos

# Synexil® AW 90CX

Synexil® AW 90CX is a multiphase self-crosslinking water dispersion of acrylic copolymer for transparent and pigmented wood coatings.

## Dispersion characteristics:

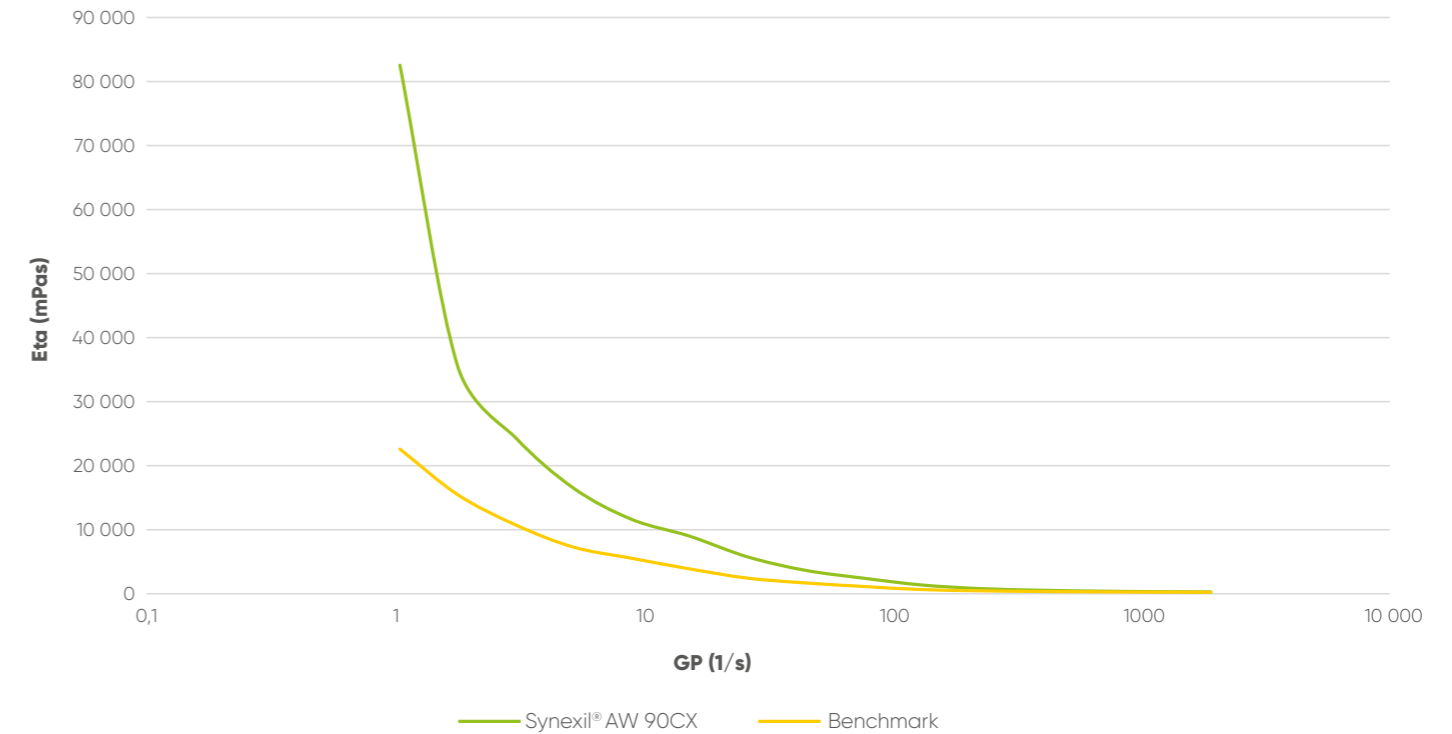
- very good anti-blocking
- fast surface hardening
- very good wet adhesion
- compatibility with colouring system
- high resistance to weather conditions
- **Biobased Carbon Content**
- APEO-free
- solvent-free
- formaldehyde donor-free
- low VOC content

	<b>Application</b>	 wood stain, varnish stain, varnishes, paints
	<b>Dispersion features</b>	 bio-based raw materials, self-crosslinking, APEO-free, solvent-free
	<b>Polymer type</b>	acrylic
<b>SPECIFICATION</b>	<b>pH</b>	7,7 ÷ 8,7
	<b>Solids content [%]</b>	45 ±1
	<b>Brookfield viscosity [mPa*s]</b>	<500
<b>OTHER PARAMETERS</b>	<b>MFFT [°C]</b>	<5
	<b>Tg [°C]</b>	ca. -15/100
	<b>Mean particle size [nm]</b>	100 ÷ 130

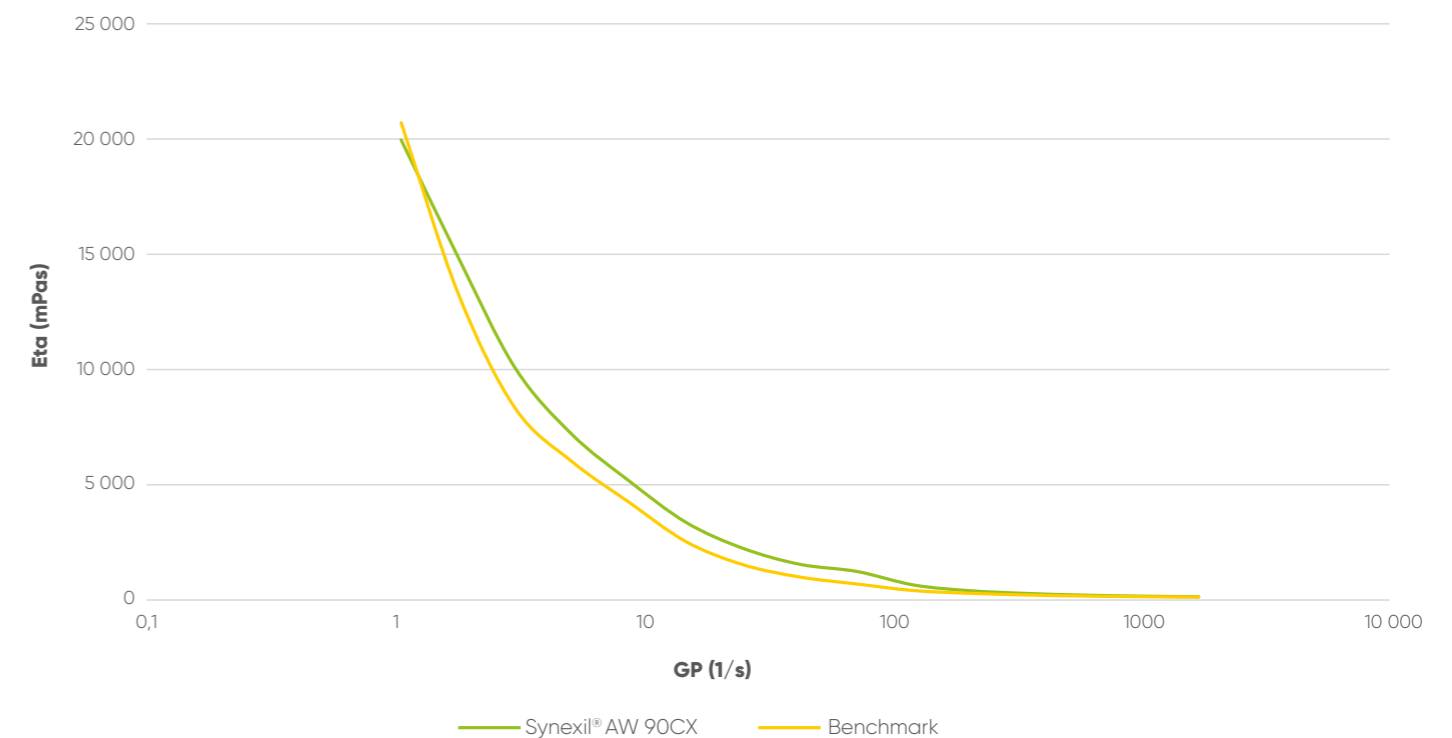
## Exemplary rheological profiles of SYNEXIL® AW 90CX with thickeners

The dispersion was diluted with water up to 20% of solids content, then 2% of thickener was added and stirred for 20 min at a high shear rate. Viscosity measurement after 24h.

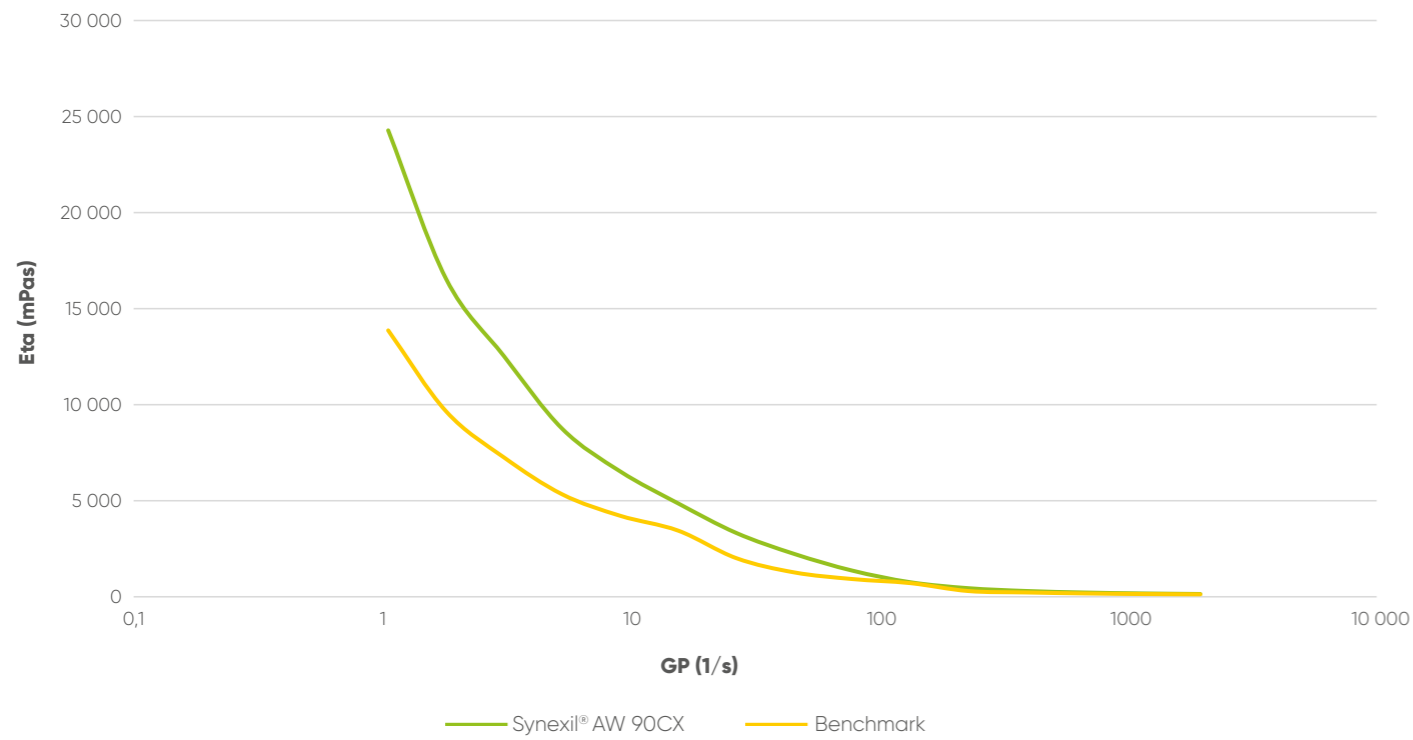
### Rheological profile of the dispersion with Coapur™ XS 83



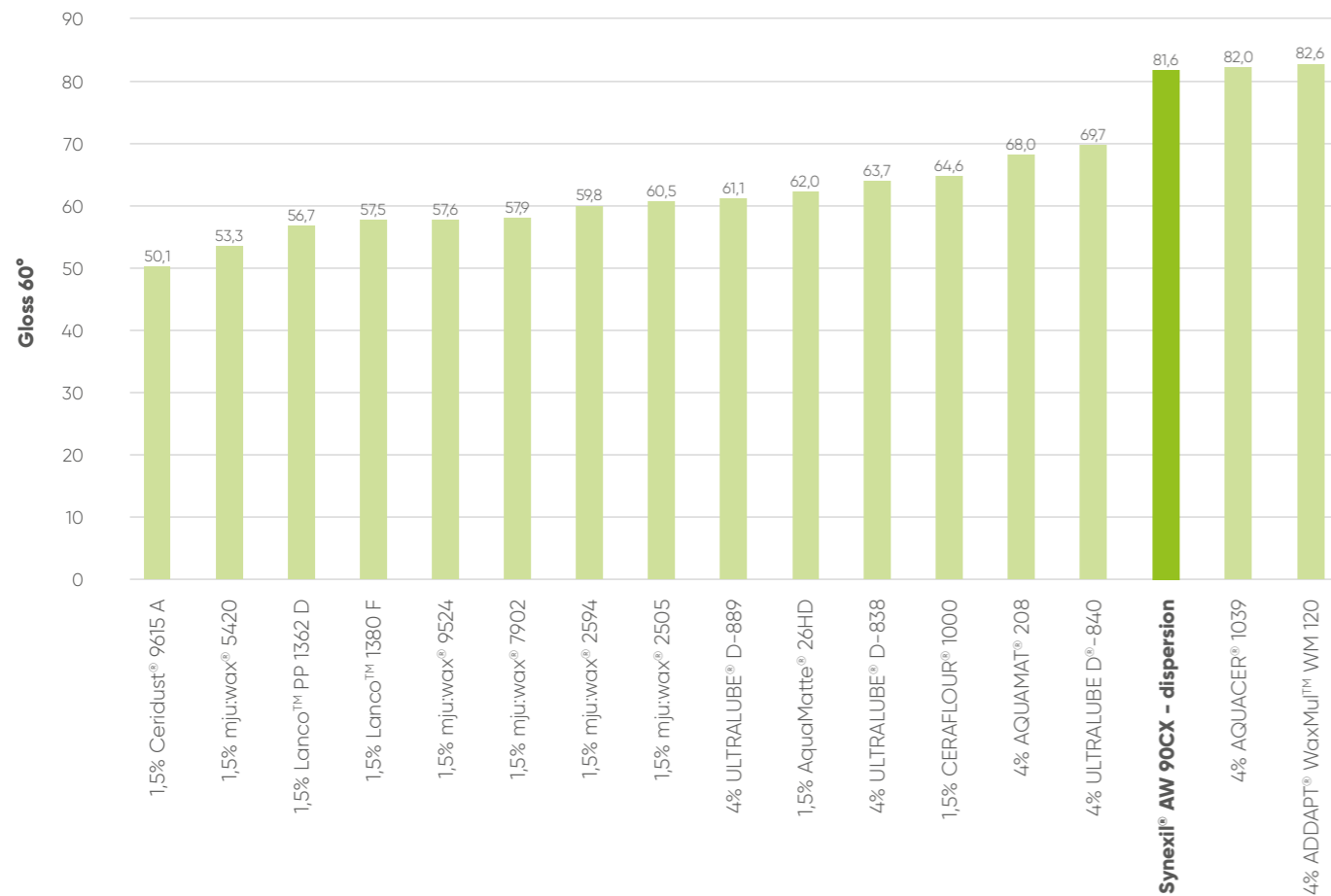
### Rheological profile of the dispersion with Rheovis® PU 1190



## Rheological profile of the dispersion with Tafigel® PUR 60



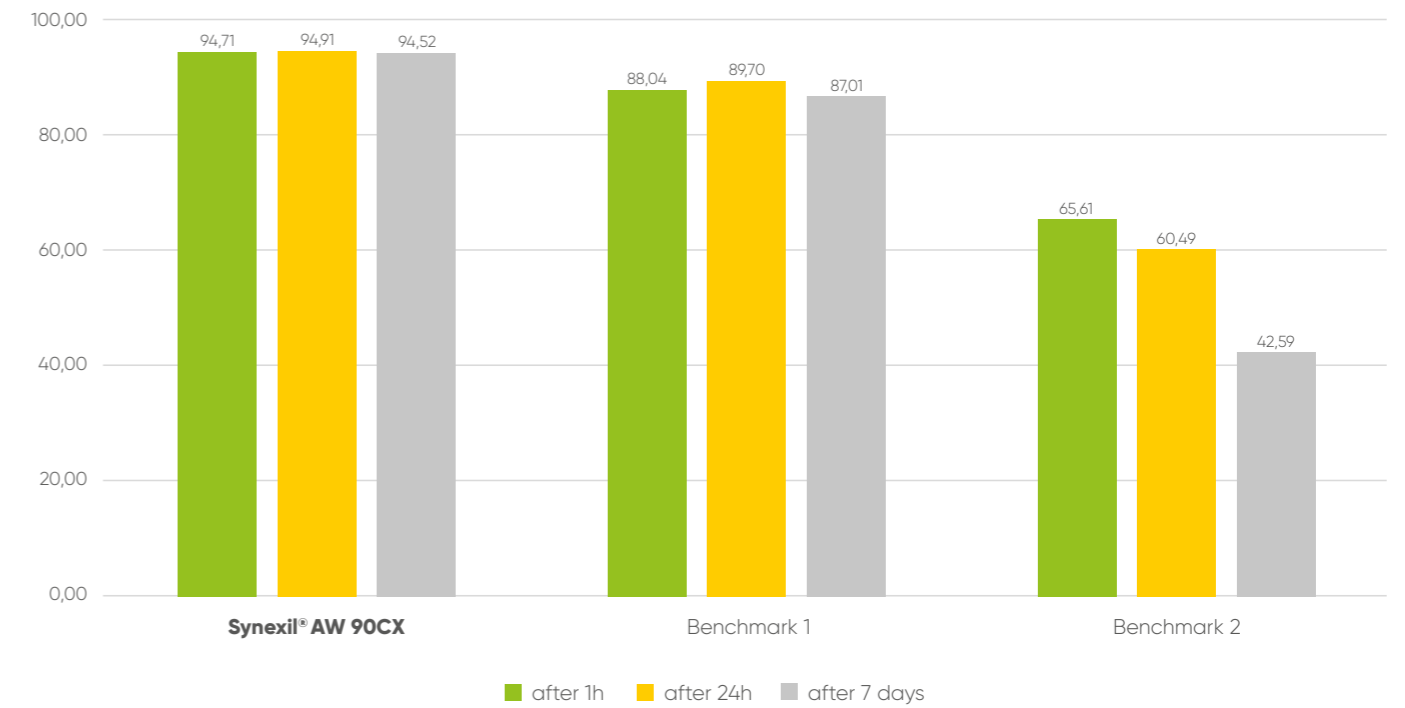
## Wax influence on SYNEXIL® AW 90CX gloss effect



## Stability of SYNEXIL® AW 90CX with titanium dioxide

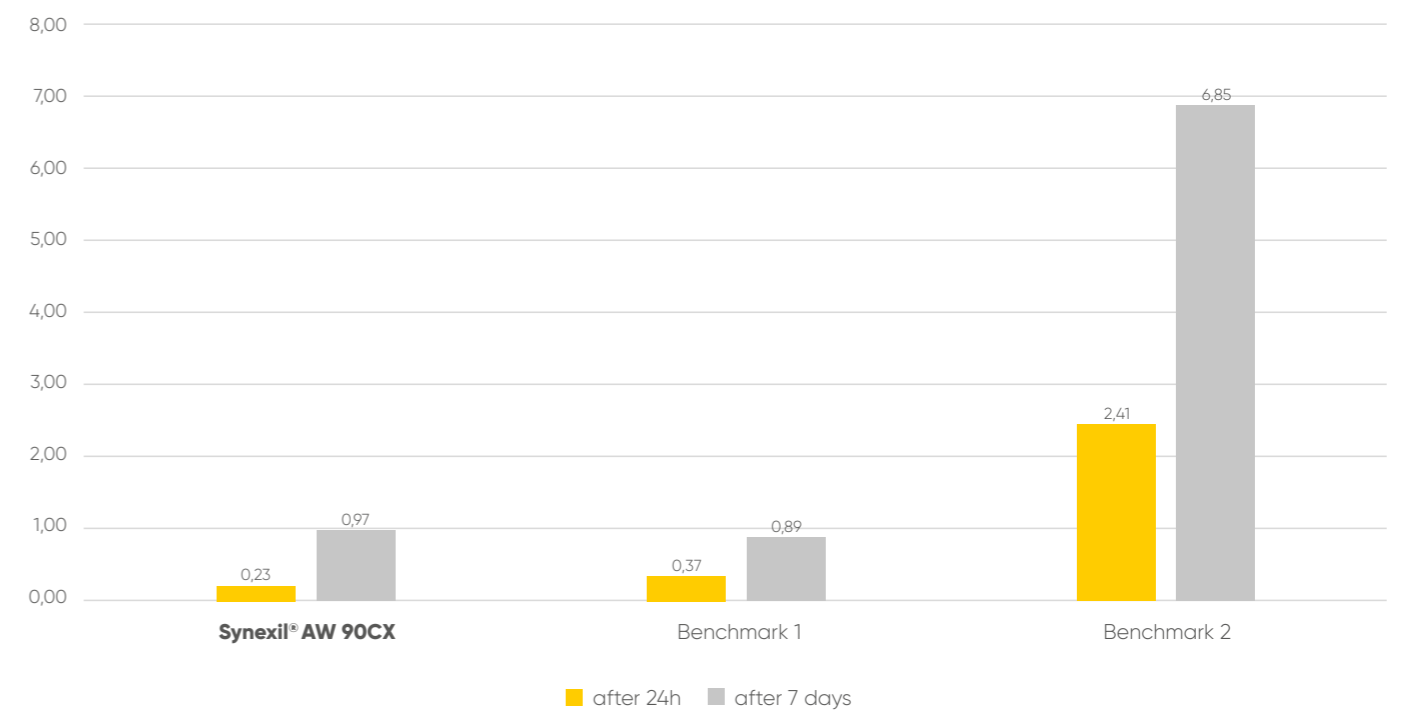
10% of titanium white was added to the binder and dispersed for 20 min. Wet film of the mixture was applied after 1h, 24h and 7 days.

### Contrast ratio [%]



### Colour change ΔE

A film after 1h is the reference sample.

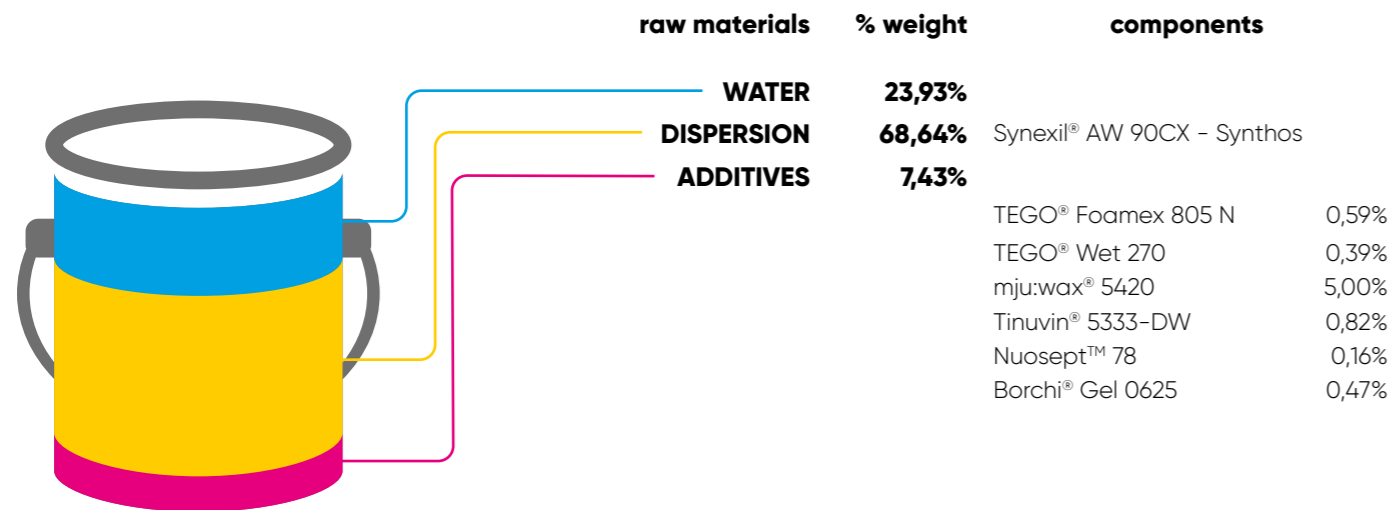


# Varnishes



## Transparent, low gloss varnish - under 20 GU

### Example of components for varnish:

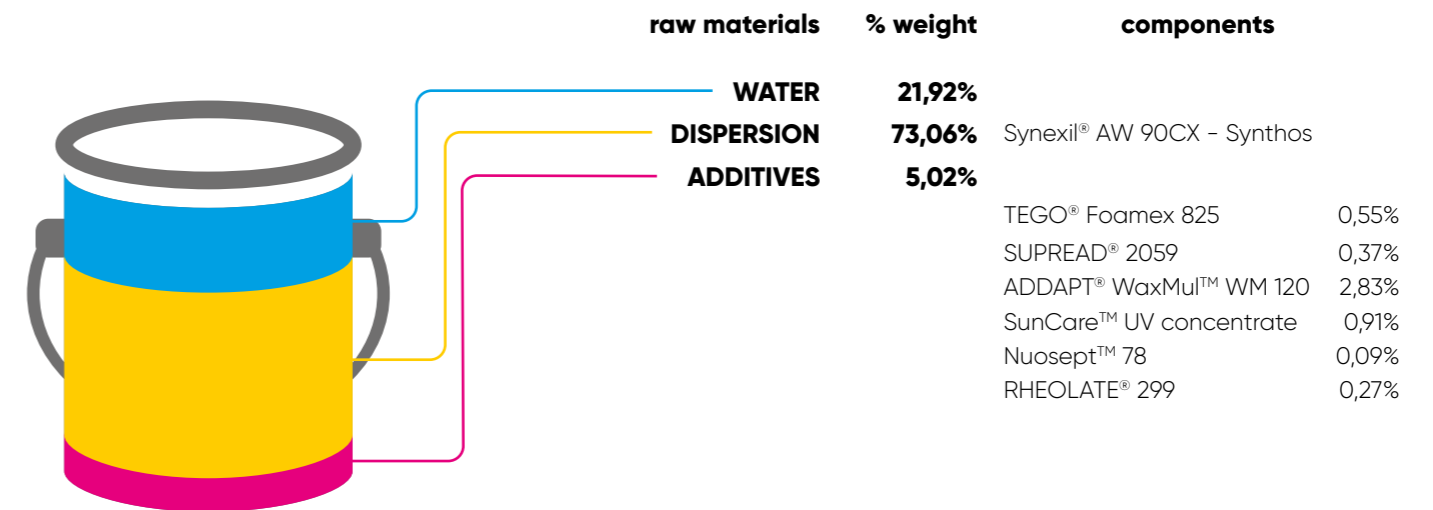


Parameters	Synexil® AW 90CX	Benchmark	Test method
Viscosity DIN flow cup Ø4mm	100s	104s	DIN 53211
Gloss 60°	17,3 GU	15,7 GU	PN-EN 2813
Thermoplasticity* 50°C/5kg/5h	0	0	internal testing method
Anti-blocking* 23°C/10kg/24h	0	0	internal testing method
Adhesion to spruce wood	0	0	PN-EN ISO 2409
Wet adhesion to spruce wood	0	0	internal testing method
Water uptake	208 g/m²	557 g/m²	Internal testing method
PersoZ hardness [osc] after 24h	46	52	Internal testing method
Chemical resistance**: cement slurry water ink	4/5 5 4/5	3 5 4/5	Internal testing method
Chemical resistance**: coffee alcohol water	5 5 5	5 5 5	IOS-MAT-0066

\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)  
\*\* rating from 0 to 5 (0 - severe effect, 5 - no effect)

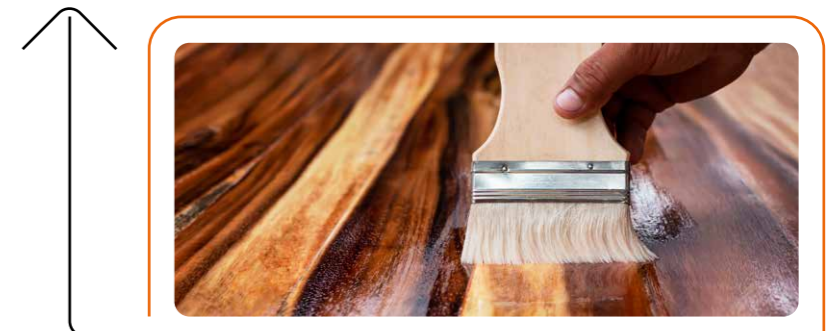
## Transparent, high gloss varnish - over 80 GU

### Example of components for varnish:



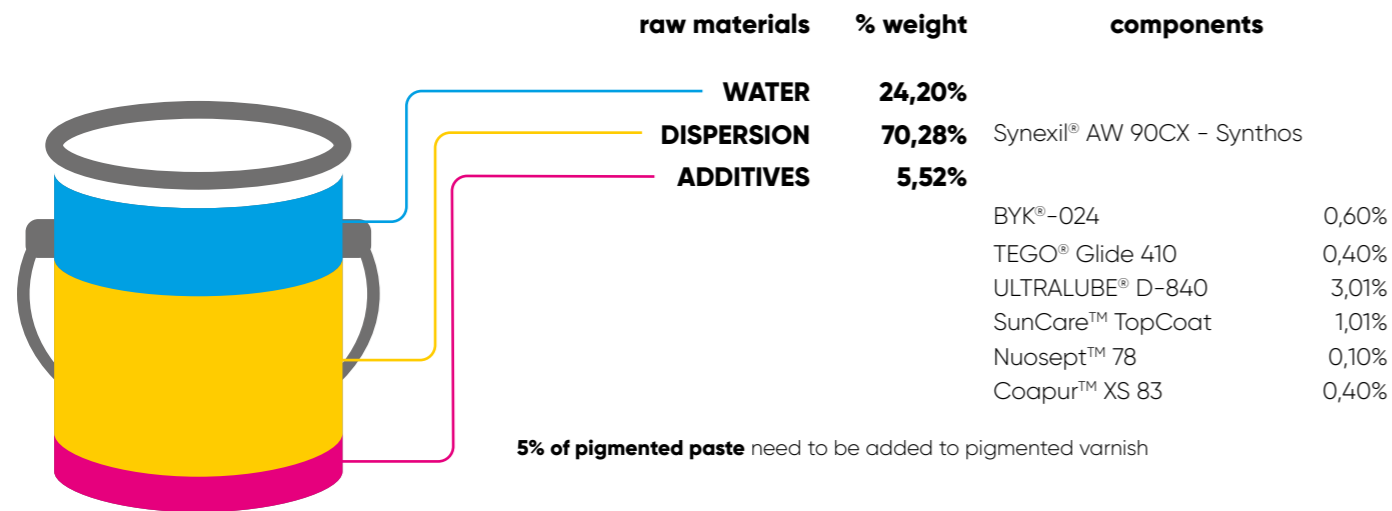
Parameters	Synexil® AW 90CX	Benchmark	Test method
Viscosity DIN flow cup Ø4mm	85s	95s	DIN 53211
Gloss 60°	83,8 GU	83,3 GU	PN-EN 2813
Thermoplasticity* 50°C/5kg/5h	0/1	0/1	Internal testing method
Anti-blocking* 23°C/10kg/24h	0/1	0	Internal testing method
Adhesion to spruce wood	0	0	PN-EN ISO 2409
Water uptake	195 g/m²	582 g/m²	Internal testing method
PersoZ hardness [osc] after 24h	41	43	Internal testing method

\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)



# Transparent and pigmented varnish - 70 GU

## Example of components for varnish:

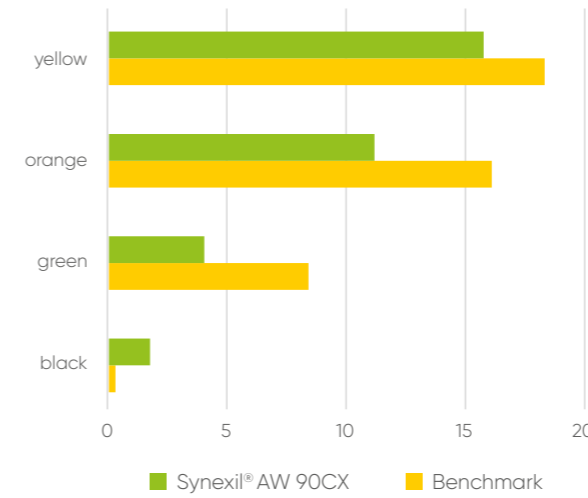


Parameters	Synexil® AW 90CX	Benchmark	Test method
Viscosity DIN flow cup Ø4mm	75s	85s	DIN 53211
Gloss 60°	70,4 GU	65,9 GU	PN-EN 2813
Thermoplasticity* 50°C/5kg/5h	0	1	Internal testing method
Anti-blocking* 23°C/10kg/24h	0	0/1	Internal testing method
Adhesion to spruce wood	0	0	PN-EN ISO 2409
Wet adhesion to spruce wood	0	0	Internal testing method
Water uptake	234 g/m²	529 g/m²	Internal testing method
PersoZ hardness [osc] after 24h	35	36	Internal testing method
Chemical resistance**:			Internal testing method
cement slurry	5	3/4	
water	5	5	
ink	4/5	5	

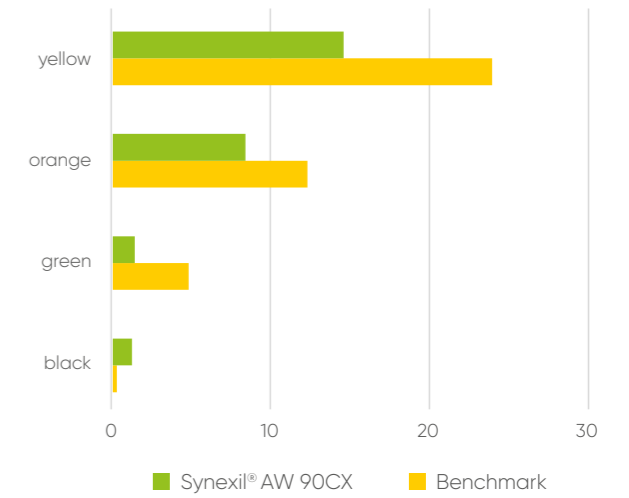
\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)  
 \*\* rating from 0 to 5 (0 - severe effect, 5 - no effect)

# Colour change test ΔE after 1000h in aging chamber according to PN-EN 927-6

## Ceac colouring system



## Chromaflo colouring system



# UV aging test of transparent varnish with gloss - 70 GU

after 1000h in aging chamber according to PN-EN 927-6



Varnish based on Synexil® AW 90CX before aging test



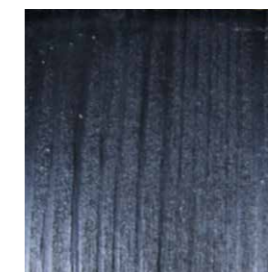
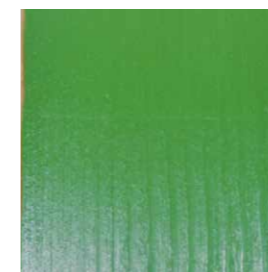
Varnish based on Synexil® AW 90CX after aging test



Varnish based on benchmark binder after aging test

# UV aging test of pigmented varnish with gloss - 70 GU

after 1000h in aging chamber according to PN-EN 927-6



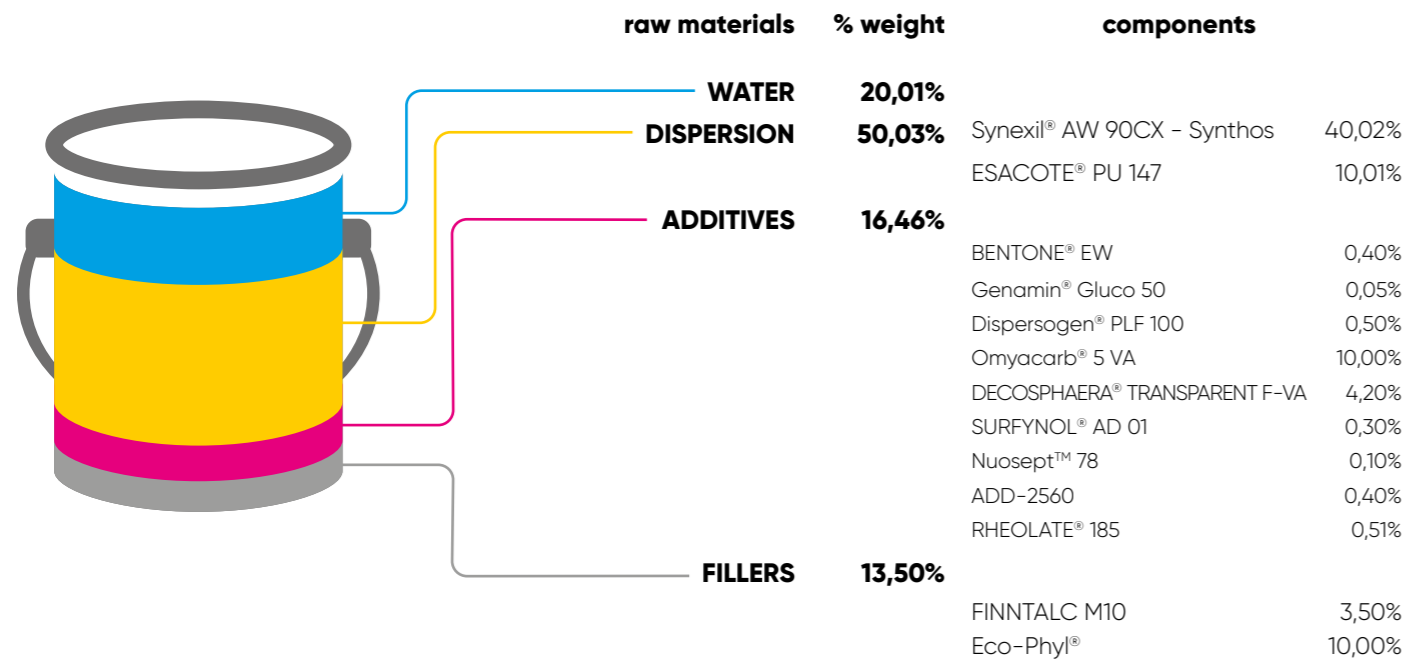
Pigmented varnishes based on Synexil® AW 90CX after aging test

# Paints



## Veneer renovation paint

Example of components for paint:



Parameters	Synexil® AW 90CX	Test method
Anti-blocking* 40°C/20kg/1h	0	Internal testing method
Gloss 60°	2,9 GU	PN-EN 2813
Scratch resistance	B	PN-ISO 15184
Chemical resistance**: water alcohol cooking oil coffee	5 5 5 5	IOS-MAT-0066

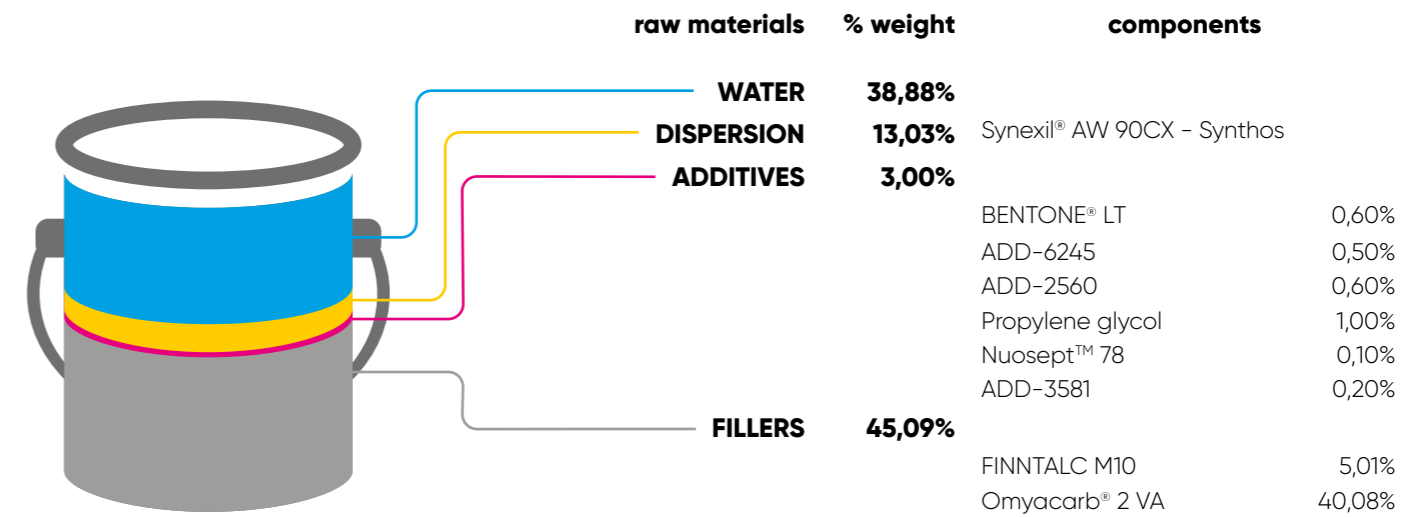
\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)

\*\* rating from 0 to 5 (0 - severe effect, 5 - no effect)



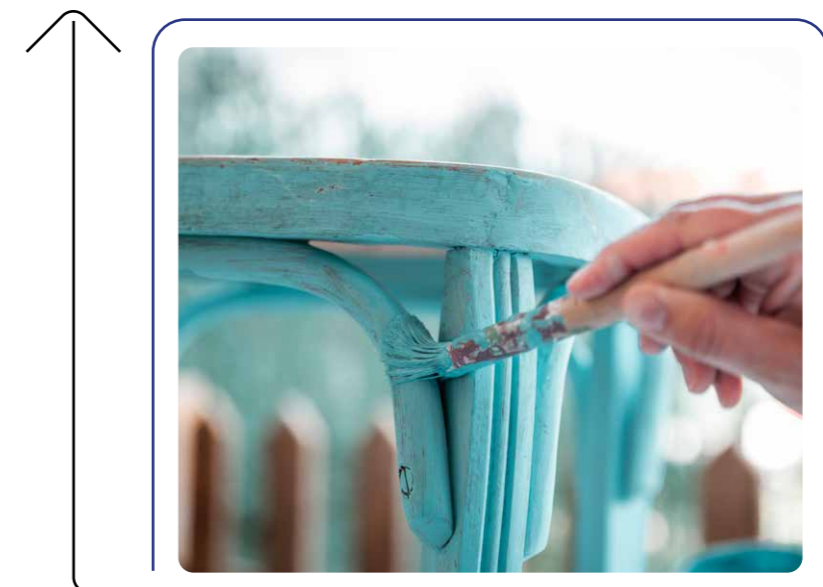
## Wood chalk paint

Example of components for paint:



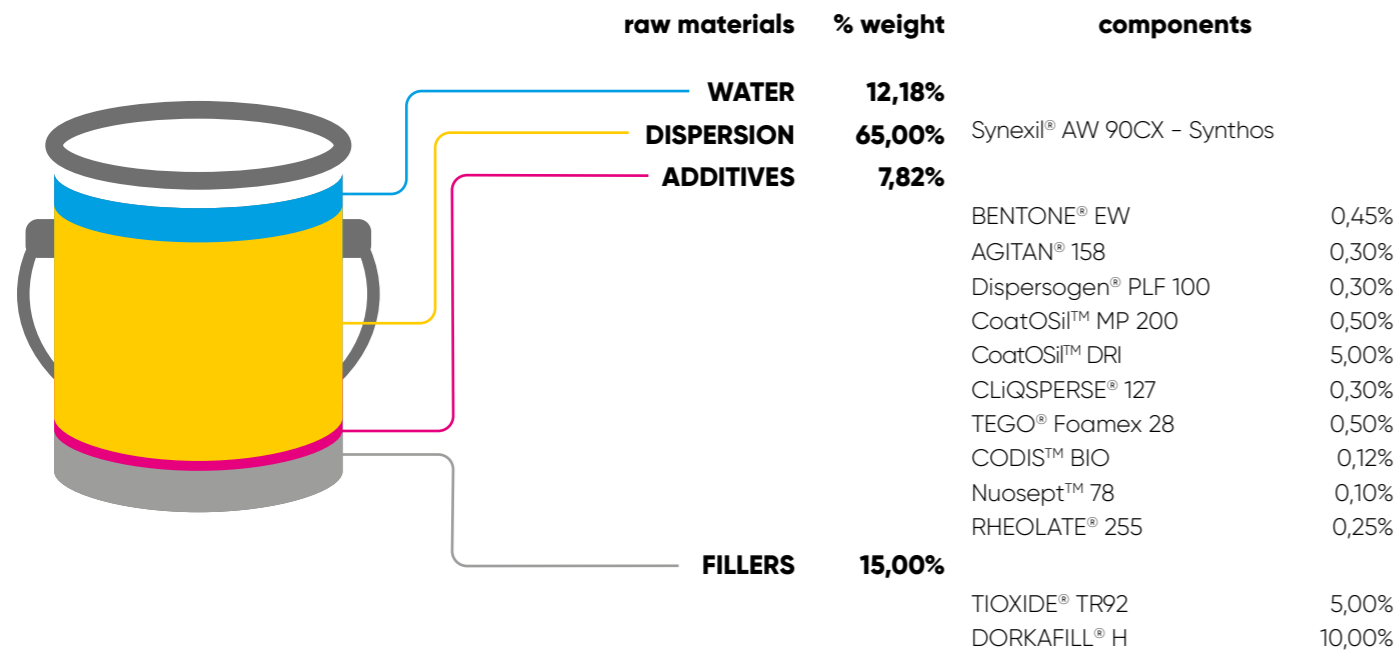
Parameters	Synexil® AW 90CX	Test method
Anti-blocking* 40°C/20kg/1h	0	Internal testing method
Sandability after 2h	Very good	Internal testing method
Drying time	30	Internal testing method

\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)



# Tile renovation paint

## Example of components for paint:



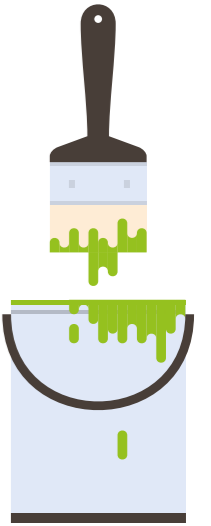
Parameters	Synexil® AW 90CX	Test method
Anti-blocking* 50°C/5kg/5h	0	Internal testing method
Gloss 60°	13 GU	PN-EN 2813
Scratch resistance	H/F	PN-ISO 15184
Adhesion cross-cut test to smooth and textural ceramic tile, and glass	0	PN-EN ISO 2409
Wet adhesion cross-cut test to smooth and textural ceramic tile, and glass	0/1	Internal testing method
Haze $\Delta GU = (RIQ - 20^\circ) \leq 5$	RIQ = 0,4 20° = 2,9 $\Delta GU = 2,5$	ASTM E430
Hiding power/contrast ratio	92,09 at 200 µm 94,37 at 270 µm	-

\* rating from 0 to 5 (0 - no damages, 5 - complete damage of coating)



# Additives recommendation

## Thickeners, waxes, biocides, adhesion promoters, UV stabilizers, coalescents, antifoams



### Antifoams:

- BYK®-024
- TEGO® Foamex 825
- TEGO® Foamex 805N
- Nopcomaster™ ENA-505
- TEGO® Foamex 28
- AGITAN® 158
- BYK®-1740
- TEGO® Airex 902 W

### Wetting agents:

- TEGO® Wet 270
- BYK®-3455
- SUPREAD® 2059
- SURFYNOL® AD 01
- ADD-3581
- CLIQSPERSE® 127
- TEGO® Glide 410

### Coalescents:

- Texanol™
- Dowanol® DPhB
- Loxanol® CA 5330
- Esterol
- ADDAPTOL® DB
- Butylglycol
- Butyldiglycol

### Acrylic thickeners:

- RHEOLATE® 185
- RHEOLATE® 1
- Thixol® 53 L
- Hisol 700
- ACRYSOL™ TT-615

### PUR thickeners:

- Coapur™ XS 83
- Borchl® Gel 0620
- Borchl® Gel 0621
- Borchl® Gel 0625
- RHEOLATE® 299
- RHEOLATE® 255
- Rheovis® PU 1190
- Tafigel® PUR 40
- Tafigel® PUR 50
- Tafigel® PUR 60
- Tafigel® PUR 48

### Biocides:

- Nuosept™ 78
- Preventol® BZX
- Preventol® BIT 20-D
- Preventol® D 12
- Preventol® D 7
- Preventol® MP 330
- Acticide® LA 1209

### Other thickeners:

- BENTONE® LT
- BENTONE® EW

### Dispersants:

- ADD-6245
- Dispersogen® PLF 100
- EDAPLAN® 494

### Adhesion promoters:

- CoatOSil™ MP 200
- Silanil® 258
- Silane A 010

### Waxes:

- ULTRALUBE® D-838
- ULTRALUBE® D-889
- mju:wax® 2505
- mju:wax® 2594
- mju:wax® 5420
- mju:wax® 7902
- mju:wax® 9524
- CERAFLOUR® 1000
- Ceridust® 9615 A
- AquaMatte® 26HD
- ULTRALUBE® D-840
- ULTRALUBE® D-860
- ADDAPT® WaxMul™ WM 120

### UV Stabilizers:

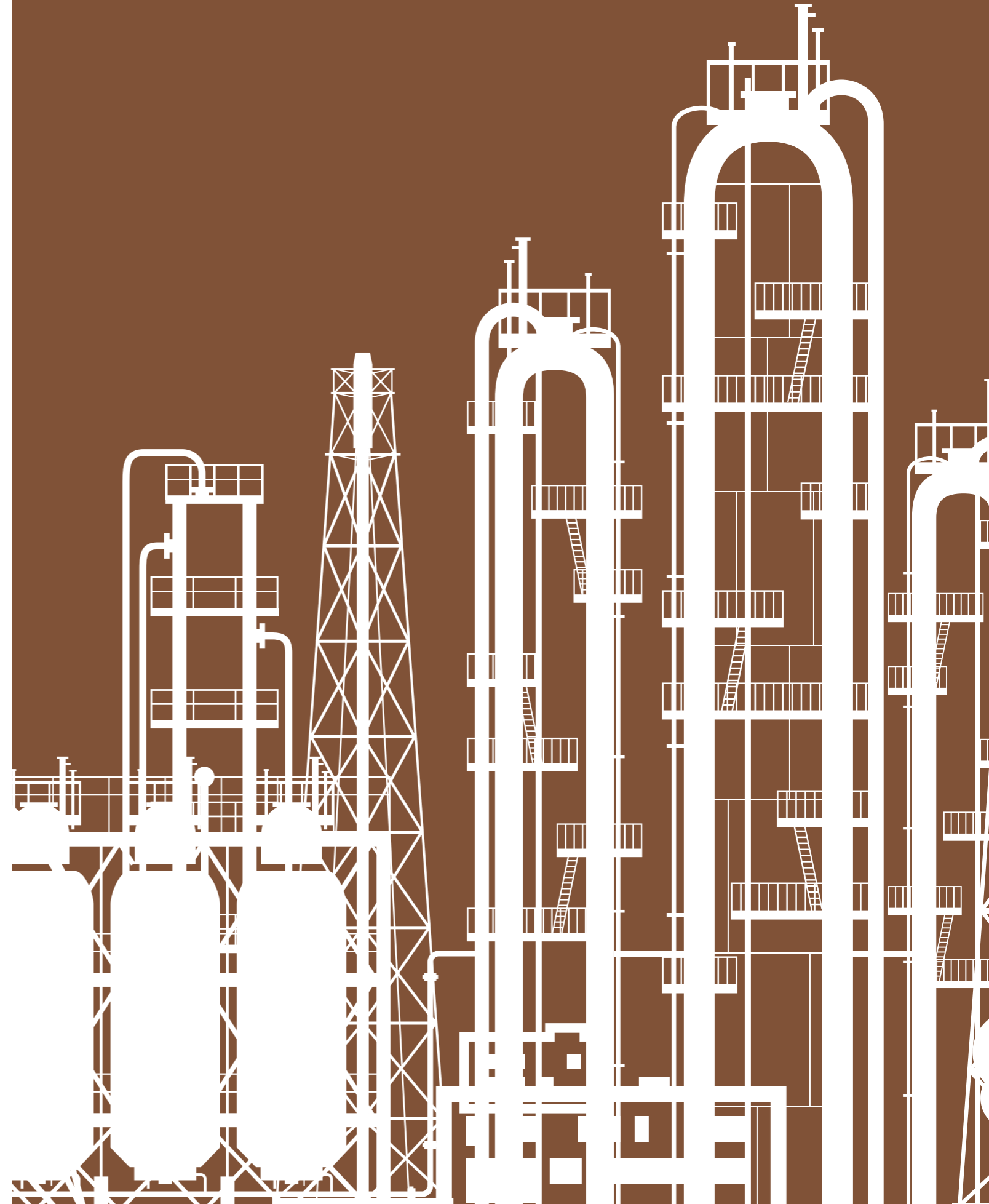
- Tinuvin® 400-DW
- Hostavin® 3326

### HALS:

- Tinuvin® 292
- Hostavin® 3070

# Notes

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