A TERRITY for providing us his photos.

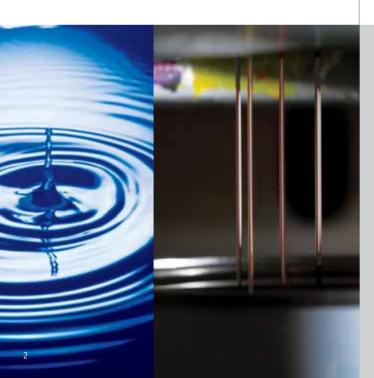
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## HYDROPLUS. WATERBORNE PRODUCTS FOR EXTERIORS

Durability has always been the primary criterion of exterior-grade wood coatings. With Hydroplus waterborne coatings, the life of coated wood joinery has considerably increased.

These products are designed for the reduction of water absorption and protection from the sun's radiation, as well as for the protection against fungi and mould, and they ensure several advantages in terms of outdoor resistance and solvent emission reduction.

**Durability of these products on outdoor exposure joinery is superior** compared to synthetic products. Unlike solvent products, waterborne products maintain their elasticity over time, which allows the coating's film to follow the wood's movement without cracking or flaking.

Hydroplus coatings are low environmental impact products: **solvent emissions are reduced by 95%** compared to synthetic products.

Waterborne coatings are **not flammable**, can be thinned with tap water, allow fast coating systems without spontaneous combustion and lifting.

All Hydroplus series products for exterior use meet the requirements of the EN 14351-1 regulation governing the EC label.



Advantages arising from the use of water-based and alkyd-based products in the manufacture of joinery for exteriors

WATER-BASED WOOD COATINGS	ALKYD-BASED WOOD COATINGS
Low impact on the environment	Frost resistant
Not flammable	Transparency
Equipment can be washed with water	No grain raising
Short drying time	Can be applied to all types of woods
Durability on outdoor exposure	
Gloss retention	
Non-yellowing film	
Resistance to skin formation	
Maintains its elasticity on ageing	
Lifting resistance (over-coatability)	
No spontaneous combustion	
Topcoats high thixotropy	



Hydroplus Topcoats are thixotropic. This allows a thick coat of product to be applied without sagging or running, maintaining excellent flow and transparency. The applied film maintains a high level of elasticity over time, without being prone to "blocking" phenomenon.

In order to ensure a good resistance in outdoor exposure, the clear Hydroplus products are formulated with an optimal dose of UV absorbers to block out UV rays that damage the exposed timber, reducing any changes in color and protecting the wood from deterioration.

Hydroplus pigmented coatings contain high opacity and light resistant pigments. This type of coating is ideal for high quality long lasting joinery products.

# The most important precautions to be observed in the use of water-based coatings are:

- **1.** During application, for both the product and for the substrate and for the environment, a minimum temperature of 15°C should be maintained. Films formed below such temperature exhibit lower mechanical and chemical resistance properties than the standard quality values.
- 2. Products must be stored in places with a minimum temperature of 5°C.





## WOOD SELECTION

The wood must be healthy and without pith and must exhibit some important features.

- There must be no traces of **fungal** attack.
- There must be no traces of **insect** attack.
- There must be no transverse **cracking of the grain**.
- **Sapwood** can be present when it has features similar to those of heartwood (e.g. Pine); it should not be present on woods where sapwood and heartwood have very different features.
- A maximum width of 5 mm is permitted for **resin pockets** which were originally present and have been replaced by timber inserts. The timber inserts should not be visible after coating (for pigmented systems) or may be visible if the insert is of the same colour as the timber (for translucent systems).

## Danger of resin outflow

Pine, Larch, Douglas are rich in natural resin. It is impossible to eliminate or block it by wood drying. Sooner or later, the heat of sun makes it exude.

However, only the appearance is affected while protection of the timber remains unchanged. Always check the wood quality before use.

#### JOINERY DESIGN

The edges must be rounded rather than angled at 45°; the profiles must be inclined at 15° and technical solutions must be devised to minimise wood movement, water stagnation and absorption at joints or horizontal components.

#### SUBSTRATE PREPARATION

All preliminary mechanical processes on bare wood produce an irregular profile on the surface; to obtain a good coating result, a regular profile is required, and this can be obtained by sanding with increasingly finer abrasive paper, up to 150 for soft woods, up to 180 for hard woods.

The relative humidity of wood should range between 13% and 15%, according to the wood species.

Wood humidity should always be checked before coating, using a moisture meter.



The most appropriate wood for exterior Topcoats is Fir.

Pine, Larch and Douglas cause resin outflow, especially close to the nodes, according to their origin, to the period the tree has been cut down, and the boards drying. For these reasons, even very highly isolating solvent-based products cannot ensure that resin will never come out, thereby forming yellow halos. This defect is very evident with white and much less visible with other colours.

Hemlock and Meranti, woods traditionally suited for finishing, can suffer from coloured streaks due to their mineral salt and coloured water soluble extractives.

In the case of Oak and Chestnut, the outflow of tannin compounds (or extracts of various types) causes yellow spots on all or part (for example, only on the jamb) of the joinery. To finish woods like Teak, Western Red Cedar, Merbau, Iroko, Framiré, etc., we suggest contacting Sayerlack Technical Assistance for information and advice.





#### WOOD PROTECTION

Hydroplus Protective wood Stains penetrate deep into the wood, excluding water penetration and inhibiting the growth of fungus and mould, and guarantee a long joinery life. Applying Protective wood Stains to wood that already has fungus or mould growths does not eliminate their growth.

In pigmented systems, the Protective wood Stain absorbs UV rays, protecting the wood from early signs of aging, and highlights its natural beauty.

Sayerlack does not suggest using a clear Protective wood Stain to treat products destined for exterior use.

A coat of Protective wood Stain is suggested for pigmented systems as well because it protects against fungus and moulds and improves the wood's ability to absorb products applied later on.

# End grain protection

When coating exterior joinery, special care must be taken in the treatment of parts where wood is exposed by its end grain.

In fact, it is highly absorbant, thus reducing the thickness of the applied coating film, with a consequent lower protection, especially from water (humidity, fog, rain, etc.). Water absorption causes dimensional changes in the wood, which in the end grain zone produce tensions on the coating films, which could crack and lift from the substrate, with permanent damages to the woodwork.

To protect the end grain, apply with the proper dispenser XA 481, water-based resins sealer with elastic properties, in order to close all open channels. This operation must be carried out after the Protective wood Stain is applied and dries.



#### WATER-BASED TOPCOATS APPLICATION

Hydroplus water-based coatings can be applied by the conventional coating systems (airless, airmix, electrostatic) provided that the equipment is suitable for water contact. Water-based coatings are also suitable to be used in coating systems where the sprayed material is recovered.

Before starting, always check that the tools you are using to apply the coating are in good condition. Equipment not in perfect working order (faulty gaskets, too high pressures) can produce considerable defects in the film (e.g. air blisters). The use of a pre-atomiser and/or of a pre-heater has given excellent results. The first one allows obtaining a better coating atomisation, even at lower pressures, reducing air incorporation and increasing the film transparency. The second one allows better film flow (especially in winter) and a higher Topcoat quality as well as regular results at all times of the year. The pre-heated coating should be between 25°C and 35°C. The equipment must be washed immediately after use. If dry coating films are to be removed, use XA 4060, leaving it for 6-12 hours, then rinse with water. Do not use the same pump for applying water- and solvent-based products.

General indications for the application of clear water-based products

Conventional	Nozzle 3 mm	Pressure 4 bar.	
Airmix	Nozzle 11-13	Material pressure 90-140 bar. Air pressure 1-2 bar.	
Airless	Nozzle 11-13	Material pressure 90-140 bar.	

(

## **COATING THICKNESS**

To achieve sufficient outdoor resistance, apply a minimum wet film thickness of 250 microns on the window and 300 microns on shutters. Heavier coats of topcoat should not be applied in a single coat since, especially in the accumulation zones (such as grooves of shaped panels), due to the fact that the film does not dry in a uniform manner, it might lead to cracking, splitting and/or peeling.

Coating thickness should always be checked by means of a thickness gauge.

## Iron oxides water-based Pastes

The addition of the clear iron oxide Pastes XA 4034/XX to the Hydroplus clear Topcoats considerably extends the coating life. In fact, they absorb the ultraviolet component of the solar radiation, improving the protection of wood.



#### **DRYING**

The drying of water-based products must take place in rooms with a minimum temperature of 15°C and relative humidity preferably between 50% and 70%.

Outside these limits, the drying is slower and the film could exhibit lower hardness and chemical resistance. Drying should always take place in areas with forced air circulation, preferably dehumidified and slightly warm (25-35°C).

The coating application method (sprays, immersion, etc) can influence the drying times and conditions.

### PACKAGING MATERIALS

Foamed polystyrene, pluri-ball and PVC-based plastic materials are not suitable for packaging items coated with water-based products. In practice, foamed polyethylene has given excellent results. Given the large variety of materials on the market a preliminary test should always be performed.

#### **GASKETS**

PVC gaskets should not be used (also as support base for trolleys) since they release plasticizers and therefore soften and damage the coating film. Thermoplastic paste gaskets have shown better results. Given the large variety of materials on the market a preliminary test should always be performed.

## **SILICONES**

Neutral crosslinking silicones have shown better adhesion on water-based coating films. Given the large variety of materials on the market a preliminary test should always be performed.





#### IMPROVING CHEMICAL RESISTANCE

Slowly adding a small percentage (0.5-1.0%) of Cross-linker XA 4080 to the diluted Topcoat while stirring it mechanically gives the product the following advantages: chemical resistance (ex. alcohol, ammonia, calcium, etc), hardness, "blocking" resistance and improved adhesion to problem surfaces. Cross-linker XA 4080, once added, lasts 16 hours, after which time more must be added. In most cases, adding Cross-linker leads to a slight increase in the product's viscosity and avoids gelation; this is why we suggest diluting the coating after adding Cross-linker. You can also re-use the remaining product after filtration and mixing with equal volume of fresh material.

#### WATER RESISTANCE

Some water-based products can suffer surface defect, where the coating becomes white, if they come in contact with water in the first few days after they are applied. This phenomenon is reversible and disappears quickly. Avoid the material coming into contact with water (ex. rain), especially during transit in/out of the facilities. This phenomenon is only observed when water has the chance to pool (ex. on joinery positioned horizontally). Topcoats are also available that do not show this defect.

#### WATER-BASED TOPCOAT STORAGE

Once the can has been opened, water-based coatings can spoil due to bacteria, moulds and fungi commonly present in the air. This phenomenon is easily detected as it produces bad smells, increase of viscosity, mould on the surface and change of the colour of the product in the can.

Do not recover old products into fresh coating, nor leave open cans for longer periods, especially in summer. Adding the Bactericide XA 4051 extends the product preservability. Check the relative Technical Data Sheet for the correct use.

#### **COATING RESIDUES**

Coating residues (wash water, booth water, exhaust coating) must be disposed of according to the regulations in force. Do not throw any residues in the sewers.

#### MATERIALS AND EQUIPMENT

Given the large variety of materials used for the manufacture of wooden products, when you pass from a solvent-based to a water-based coating system, you should always contact the Technical Service to check whether the components used are still suitable or there are more appropriate ones. To this purpose, check: electrostatic guns, pumps, gaskets, silicones, adhesives, booth water treatment products, packaging materials, etc.

#### NATURAL SYSTEMS

We do not suggest using coating systems in exposed or partially exposed situations with colorless products that leave the wood natural since they do not contain transparent iron oxides and do not offer enough protection against the elements (which causes irreversible changes in the color of the wood and destruction of the lignin component of the timber surface, etc.).





# CATAS QUALITY AWARD PLUS SYSTEM: THE SUPERIOR QUALITY OF SAYERLACK WATER-BASED COATINGS FOR EXTERIORS

Through the continued search for excellence and in collaboration with external certification agencies, Sayerlack wood coatings have received an important award: the CATAS QUALITY AWARD PLUS - COATING SYSTEM FOR EXTERIOR. This certification attests to the fact that Sayerlack coating systems have performed superbly in the rigorous tests carried out to determine their performance, after being subject to a **two-year** advanced natural aging test. This followed strict European regulations to certify the coating system's quality in terms of its exterior durability and wood protection as well as the production quality controls during and after manufacture.

The certified water-based coating system for joinery for exteriors is comprised of Hydroplus **AM 546/XX** Protective wood Stain and Hydroplus Topcoat **AZ 21\*\*/XX**. The system includes all the colors in the Hydroplus Protective wood Stain **AM 546/XX** (except for /00 Clear and /82 Pine) and the Hydroplus Topcoat **AZ 21\*\*/XX** lines for wet thicknesses of 300 micron for colors /89 Teak and /95 Dark Walnut, for all opacities.

# SUMMARY TABLE OF THE CATAS TESTS RESULTS ON THE HYDROPLUS AM 546/XX AND AZ 21\*\*/XX COATING SYSTEM

TEST	REFERENCE	CATAS REQUIREMENT	SAYERLACK SYSTEM RESULTS LARCH PROTECTIVE WOOD STAIN TEAK TOPCOAT
Natural Aging	EN 927-3	Class S based on EN 927-2	Stable
Effective prevention of fungus and moulds	CATAS Procedure	Inhibited or very inhibited growth	Very inhibited growth
Water permeability	EN 927-6	< 175 g/m²	67 g/m²
UV ray permeability	CATAS Procedure	Between 280 and 340 nanometers < 1%	0.00%
UV ray permeability	CATAS Procedure	Between 280 and 440 nanometers < 20%	16.15%
Stackability	EN ISO 4622	At 24 h - 23°C = no defect At 24 h - 50°C = no defect	No defect No defect
Water resistance	EN 12720	Minimum value = 4	5
Adhesion when wet	VKI	≥ 1 MPA	1
Accelerated aging	CATAS Procedure	Internal control = no defect	No defect
Elasticity of dry film	CATAS Procedure	Stretching to breaking point ≥ 20%	129



## WATER-BASED COATING SYSTEMS FOR EXTERIORS

CQAP SYSTEM (CATAS QUALITY AWARD PLUS APPROVED) Two-coat stain system for coniferous woods		
AM 546 The day before, automatic or manual denibbing  AZ 21**	Drying 2/4 hours	

SYSTEM 2 Three-coat stain system without sanding for coniferous woods			
Tril ee-coat Stair System withou	it sariding for confinerous woods		
AM 546 Drying 2/4 hours			
AZ 73** The third coat has to be applied within 24 hours	Drying 2/4 hours		
AZ 73**			

SYSTEM 1 Two-coat stain system for coniferous woods			
AM 546/XX Automatic buffing or manual denibbing the day after AZ 73**	Drying 2/4 hours		

SYSTEM 3 Two-coat stain system for hard woods			
Two-coat stain system for hard woods  AM 549/AM 546 Automatic buffing or manual denibbing the day after  AZ 73**			

<sup>•</sup>The asterisks in the product code mean that there are different product series in different opacities and colors.
•The drying times vary based on the temperature of room, wood, product and of relative humidity.

SYSTEM 4 Three-coat stain system for hard woods			
AM 549/AM 546 Drying 2/4 hours			
AZ 73**	Drying 2/4 hours		
AZ 73**			

SYSTEM 5 Four-coat clear system for Iroko, Teak and Russian-origin Larch				
AM 549/AM 546 AM 562/85 two-components AM 562/85 two-components Automatic buffing or manual denibbing the day after AZ 73**	Drying 2/4 hours Drying 2/8 hours Drying 8 hours			

SYSTEM 6				
Inree-coat pigmented system	n for Coniferous and Meranti			
AM 541/13 Diluted by 60% with water	Drying 4 hours			
AM 402/13 or AM 562/13 two-components Manual denibbing the day after	Drying 4/6 hours			
AZ 63**/13				

<sup>•</sup>The asterisks in the product code mean that there are different product series in different opacities and colors.
•The drying times vary based on the temperature of room, wood, product and of relative humidity.



#### CLEAR GOLD SYSTEM FOR CONIFEROUS WOODS

AM 303/89, 90, 93

One-coat clear Protective wood Stain

AM 603/91

Clear Washcoat

The day after, automatic or manual denibbing

AZ 9030/86

Clear 30 gloss thixotropic Topcoat

Stackable after 24 hours at 20°C

Drying 2/4 hours

Drying 2/4 hours

#### CLEAR GOLD SYSTEM FOR HARD WOODS

AM 306/89, 90, 93

Clear Protective wood Stain for hard woods

AM 603/91

Clear Washcoat

The day after, automatic or manual denibbing

AZ 9030/86

Clear 30 gloss thixotropic Topcoat

Stackable after 24 hours at 20°C

Drying 2/4 hours

Drying 2/4 hours

# PIGMENTED GOLD SYSTEM FOR CONIFEROUS AND HARD WOODS

AM 309/13

Pigmented Protective wood Stain

AM 609/13

Pigmented thixotropic Basecoat

The day after, automatic or manual denibbing

AZ 9030/13, 33, 41

Pigmented 30 gloss thixotropic Topcoats

Stackable after 24 hours at 20°C

Drying 2/4 hours

Drying 2/4 hours

(Not currently sold in UK, available to special order)

•The drying times vary based on the temperature of room, wood, product and of relative humidity.

N.B. The aforementioned coating systems represent examples and general instructions about the use of our products. For information on other coating systems, contact Sayerlack Technical Assistance.

## CHOICE OF COATING SYSTEM

#### **WOOD TYPE**

	COATING SYSTEMS	CONIFEROUS		HARD WOODS			
	Fir , Pine, Hemlock, Douglas, Larch <sup>1</sup> , Pitch Pine		Mera	Meranti Oak, Chestnut		estnut	
2		Windows	Blinds	Windows	Blinds	Windows	Blinds
٨	1.			=	_		
LE	2.						
O	3.			=		=	
	4.				=		
	5.	Clear syst	em for exoti	c woods			
AP			, Hemlock, ch <sup>1</sup> , Pitch Pine	Meranti Oak, Chestnut		estnut	
0		Windows	Blinds	Windows	Blinds	Windows	Blinds
O			=	=			
		Fir <sup>2</sup> , Hemlock <sup>3</sup>		Mera	nti		
Ë		Windows	Blinds	Windows	Blinds	Windows	Blinds
PIGMENTED	6.						
		Fir <sup>2</sup> , Hemlock		Mera		Oak, Ch	
Ω		Windows	Blinds	Windows	Blinds	Windows	Blinds
0 L	Clear for coniferous woods						
Ō	Clear for hard woods						
	Pigmented for coniferous woods or hard woods						

To assess the minimum coating thickness that must be applied and therefore the most appropriate system for wooden outdoor products, consider two factors: the risk class and wood type. In general, you can assume that windows protected externally by shades, blinds and rolling doors only need a two-coat system while windows that are not protected externally as well as the blinds and shades themselves need a three-coat system.



<sup>1:</sup> Excluding Larch from Russia since it contains a high quantity of resins and extracts.

<sup>2</sup> Yellowing may occur due to natural tannins.

<sup>3:</sup> Only with systems that require the use of a two-compound Basecoat (system 12).

### HYDROPLUS COATINGS FOR EXTERIORS

## PROTECTIVE WOOD STAINS

## **AM 546**

This is a specific clear Protective wood Stain for coniferous woods, Meranti and Okoumè. Shows the woods veins, giving it a pleasing aspect. Guarantees a high level of protection against fungus and mold.

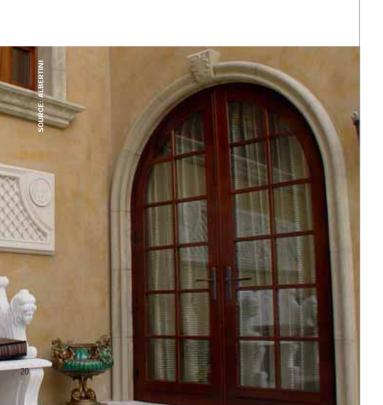
The Protective wood Stain is available in different colors to better meet all our customers' needs:

00 Clear, 51 Chestnut, 66 Hedge Green, 80 Oak, 82 Pine, 84 American Walnut, 85 Larch, 88 Walnut Brown, 89 Teak, 90 Mahogany, 92 Walnut, 93 Light Walnut, 94 Medium Walnut, 95 Dark Walnut.

Product certified with the Catas Quality Award Plus (see page 14).

## AM 549

It is a clear Protective wood Stain for hard woods rich in extractives, such as Oak and Chestnut. Its tested formulation allows woods preservation without the need of barriers, without problems of flow and with a little fibre raising. Guarantees a high level of protection against fungus and mold. It is available in the following colours: 00 Clear, 51 Chestnut, 66 Hedge Green, 80 Oak, 82 Pine, 84 American Walnut, 85 Larch, 90 Mahogany, 92 Walnut, 95 Dark Walnut.



#### AM 541/13

A quality White pigmented Primer for use as supplied by spray. Thinned 30% it can be used for dip application to give enhanced end grain protection to components as well as assembled joinery items. When dry the surface can be easily sanded to produce flat smooth surfaces.

# HYDROPLUS DEP/DELUGE PRIMERS

## AM 402/13

A White thixotropic spray Primer, having excellent isolating power towards tannin and colour extractives found in Oak and Meranti. The product is easy to apply onto vertical surfaces with good wetting and flow and can be sanded as required.

## AM 562

This is a pigmented or clear two-component thixotropic Basecoat to be hardened with 10% AH 1545. It is excellent for blocking extractives and resin even in difficult to coat woods. Unlike the other Basecoats, it exhibits high resistance to chemical substances and high film hardness. It exhibits a good sandability. Available in Neutral (NO) or White (13), which can be pigmented with series XA 2006 Pastes, and in the Larch stain version (85).

## HYDROPLUS PRIMERS



## HYDROPLUS TOPCOATS

All Sayerlack Hydroplus Topcoats, before being commercialized, are subject to strict tests as set forth by Regulation EN 927-2 and additional internal tests that assess outdoor durability.



#### AZ 20\*\*

This is a clear or pigmented thixotropic Topcoat with proven durability and reliability. It exhibits good elasticity and is easy to apply, and therefore it is suitable for any type of application. No "blocking" and lifting, and good flow are the strengths of this product. The presence of selected resins and UV absorbers allow forming a Protective film capable of blocking the decaying action of sun and water. It is available in Larch (85) at 30, 45, 60 gloss; Clear (00) and Dark Walnut (95) at 30 gloss; in Teak (89) at 20 and 30 gloss.

## AZ 21\*\*

This is a clear or pigmented thixotropic Topcoat with excellent water and humidity resistance, and high wettability. It exhibits good flow and transparency. The presence of UV absorbers allows protection from the sun. It is available in Larch (85) at 20, 30, 45, 60 gloss; Clear (00) and Teak (89) at 20 and 30 gloss. Available in 30 gloss Walnut (92) and Dark Walnut

(95). 30 gloss pigmented version in White (13), Hedge Green (33), Pure White (41), Brown (65), Musk Green (66). 60 gloss pigmented version in White (13). Product certified with Catas Quality Award Plus (see page 14).

## AZ 63\*\* / AZ 76\*\*

This is a thixotropic Topcoat for colour matching systems available in Neutral (00) and White (13) at 30 and 60 gloss. The Topcoat must be pigmented with the special Pastes of the XA 2006 series, or XA 4034 series in TH neutral to produce woodstain shades.

### AZ 25\*\*

Water-based Topcoat whose elasticity and durability make it perfect in the field of outdoor protection of wood. It has the characteristics that are requested in specific industrial employments as flow, transparency, surface softness and water resistance, as well as high elasticity and durability. Available in Teak (89) and Larch (85) at 20 and 30 gloss; in Cherry (56), 30 gloss version.

#### AZ 63\*\*

Available as White and in any colour in two gloss levels these opaque Topcoats have excellent weathering resistance and very good performance against water spotting on finished items. They also exhibit exceptional flow out properties resulting in a very smooth flat finish.

## **AZ 76\*\***

This is a range of thixotropic wood Stain Topcoats which are available in a wide range of wood shades and in two gloss levels. They have good flow properties for a very smooth surface finish and offer superb transparency even with dark colours. They exhibit excellent weathering resistance and water spot resistance.

# **ADDITIVES**

To keep the chemical and physical characteristics of Hydroplus water-based products unchanged over time, the following range of Additives is available:

Code	Description	Application
XA 4009	Matting paste	Clear and pigmented Topcoats.
XA 4017	Recycled coating thinner	Clear and pigmented Topcoats. Dip tanks/deluge and autospray recovery systems
XA 4021	Anti-foam	Clear and pigmented Topcoats.
XA 4024	Anti-foam for flow-coating	Protective wood Stains and Washcoats.
XA 4026	Retardant thinner	Clear and pigmented Topcoats and Basecoats, Prot. Stains, Washcoats.
XA 4034/08, 22, 52, 53, 65, 72, 84	Transparent iron oxides	Primers of the AM 548 series.
XA 4044/66, 90, 92, 93	Iron oxides	Clear and pigmented Topcoats and Basecoats, Prot. Stains, Washcoats.
XA 4051	Anti spoil-age addittive	Opened cans/dip tanks/deluge tanks of: clear and pigmented Topcoats and Basecoats, Prot. Sains, Washcoats.
XA 4057	Anti-cissing additive	Clear and pigmented Topcoats and Basecoats, Prot. Stains, Washcoats.
XA 4058	Wetting-aid	Clear and pigmented Basecoats and Topcoats.
XA 4060	Detergent/cleaner	To clean the application equipment.
XA 4066	Thickening agent	Clear and pigmented Topcoats.
XA 4080	Cross-linker	Clear and pigmented Topcoats.
XA 481	Filler/sealer	To seal end grain before the Topcoat.

