



KOMBIHEL & EKOHEL

STAINS AND PATINAS

WOOD STAINS
ARE TYPES OF
WOOD COATINGS
THAT HIGHLIGHT
THE MOST
NATURAL BEAUTY
OF WOOD, SOFTLY
COLOUR THE
SURFACE, WHILE
THE WOODEN
STRUCTURE
REMAINS VISIBLE.

PASSION FOR SMART COATINGS



HELIOS – MEMBER OF A GLOBAL COATINGS GROUP

Helios is a member of the KANSAI PAINT Group, one of the world's leading paint and coatings producers that serve a global customer base with manufacturing, distribution and sales activities worldwide. The Helios Group dates back to 1924 and today operates among the top ten coating companies in the European market. With 14 production sites, 145,000 m² production area and 30 own local sales forces, the Helios Group supplies over 15,000 customers in more than 60 countries worldwide.

CONTINUOUS DEVELOPMENT

R&D at the Helios Group is very strong and organized in one of the most modern R&D facilities on the international market. Laboratories are fully equipped with advanced technology and know-how is regularly transferred among experts at the highest level. We understand the importance of innovation in all areas of our work and constantly encourage research, education, and expertise to create an innovative working environment where Helios' smart coatings are born.

RESPECTING THE ENVIRONMENT

The group strictly follows European and global legislation requiring the introduction of cleaner and environmentally friendly technologies. Whilst developing new advanced products, the group is committed to principles of sustainable development, such as minimizing energy consumption and the impact on the environment.

MODERN APPLICATION CENTER

Helios's application center in Slovenia is intended for testing materials on equipment identical or similar to the one encountered at our customers' industrial lines at home and abroad.

Different interior and exterior furniture systems require different applications and drying and curing regimes, so the coating application testing phase is extremely important and is part of the development process before the coatings are demonstrated and presented to the customer.



STAINS

Stains are coating agents that emphasize and embellish the natural structure of wood. Stains enrich the wood, by adding the desired color and appearance. Stains can be used on cheaper wood to create the appearance of modern and antique furniture; we also just breathe warmth into the wood with a desired shade. Their main purpose is to gently color the surface of the wood, and to emphasize the texture and keep it visible. Stains are made of a base which is a mixture of a binder and colorants solvent, into which colorants are mixed - dyes and pigments. Stains are used for coloring indoor furniture; for veneered and massive surfaces, while for exterior building furniture (windows and doors) we use woodstains with pigments that are more light-stable but less brilliant. As stains have a solely decorative function, it is necessary to use furniture lacquers for protection.

PATINAS

Patinas are coating materials painted over well-lacquered wooden surfaces, to emphasize particular parts of furniture, such as edges, pores and dents, artificially created damage etc. Usually, the differences in color between the base shade and patina are more intense, in order to create a stronger contrast (white patina on black enamel). These can also be more subtle (dark brown patina applied onto slightly lighter stained furniture). By using them and combining different application techniques and color combinations, we can prepare a wide range of products with a modern or antique look. They are divided into water-based and solvent, and also depending on the type of application: Patinas for removal / sanding (R) and Patina for shading (S).

BRANDS

KOMBIHEL – solvent-based stains and patinas. They are quick and easy to work with. The advantages of KOMBIHEL products are quick drying, which enables the surface to be lacquered very soon, uniform homogeneous appearance when dry spraying, and emphasized structure of the wood and pores.

EKOHEL – water-based stains and patinas. Because the stains are water-based, they are environmentally- and user-friendly. The advantages of EKOHEL stains are a smooth, uniform look of the stained surfaces, thinning and cleaning of tools and equipment with water, and easy work. After staining with EKOHEL stains, surfaces should be well-dried before being lacquered. They must be stored at a temperature of min. +5°C to +30°C in stainless steel packaging.

APPLICATION METHODS

Kombihel and Ekohel stains and patinas can be applied using different application techniques.



spreading/wiping



spraying



rolling



dipping



flow coating





COLORANTS

Colorants are intended for coloring the carrier or base; we use them to color the wood in the desired shade. Colorants from the Helios range are divided into **dyes** and **pigment pastes**. Dyes are heavily concentrated preparations in liquid form which paint the wood surface through adsorption or a chemical reaction. They are somewhat less light-resistant, but they go well with brighter shades, which are difficult to reach with pigment pastes. They are used to achieve pure, brilliant and vibrant shades, which, even at higher concentrations, remain transparent. Pigment pastes are a preparation based on inorganic or organic pigments, which

are stabilized in the liquid phase (pastes) with the help of additives - dips. The pigment particles are noticeably larger than the dyes, but are separated and stabilized with intensive dispersion or grinding to increase their color coverage. There is a broad range of basic shades to choose from, which achieve hiding power at higher concentrations. As with dyes, they are divided into water- and solvent-based pastes. Both dyes and pigmented pastes of the same type are mixed in all ratios. Mixing different types of dyes or pigment pastes is not allowed, because this destroys their stability.

UN concentrates

UN concentrates are universal dyes, suitable for mixing with water-based stains and stains based on organic solvents. Due to their universality, they also have some limitations in solvent-based stains. Very often, these dyes (UN concentrates) are the first choice when preparing stains, because they are highly concentrated and color-rich. To prepare the shade, usually 1-3% addition of a dye is sufficient. Owing to their unique chemical composition, they also offer high levels of transparency at higher concentrations. UN concentrates can be used in stains for various applications: they are mostly used to prepare stains for all kinds of spraying (manual and mechanical), as well as for spreading, dipping and rolling on industrial lines.

PC concentrates

PC concentrates are pigment pastes based on a nitrocellulose binder and polar organic solvents. The pigment particles of PC concentrates are smaller than the typical particles of pigment preparations and, like dyes, offer a high degree of transparency and a clean finish.

In combination with volatile solvents and binders, they are most effectively used for the application of dry spraying (both manual and mechanical) on non-porous wood types, thus achieving an extremely homogeneous shade and appearance.



CONCENTRATE PC WHITE



CONCENTRATE PC SCARLET RED



CONCENTRATE PC LEMON YELLOW



CONCENTRATE PC BLUE



CONCENTRATE UN YELLOW



CONCENTRATE UN BORDEAUX



CONCENTRATE PC YELLOW



CONCENTRATE PC GREEN



CONCENTRATE UN ORANGE



CONCENTRATE UN BROWN



CONCENTRATE PC ORANGE



CONCENTRATE PC BROWN



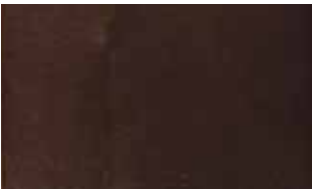
CONCENTRATE UN RED



CONCENTRATE UN BLACK



CONCENTRATE PC RED



CONCENTRATE PC BLACK

SW concentrates

SW concentrates are dyes for the preparation of solvent-based stains. They are suitable for making volatile spraying stains because they have excellent stability in acetates and acetone. Stability in alcohols is somewhat limited; they can be used in alcoholic mixtures with the addition of acetone (e.g. use of cheaper ethanol). Thinning with various distillates must be checked in advance because a higher solvent content (toluene, xylene, aliphatic solvents, etc.) limits their long-term stability. Like UN Concentrates, these are transparent dyes with a high color intensity and brilliance.

SW concentrates can also be used in water-based stains if added to the EKOHEL binder SW (thinning 1:1 with water). This is especially true when dipping the elements in water bases (without rinsing the dyes). Consult with the Helios technical team before use.

KPE concentrates

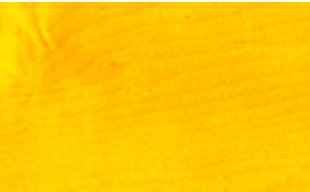
Similar to PC concentrates, KPE concentrates are stable pigment pastes with smaller pigment particles in the binder and organic solvent. Their main purpose is for the preparation of solvent-based patins (KOMBIHEL MIX CLASSIC) for the application of dry spraying and removal with a sanding sponge or iron wool. We also recommend them in ethanol-based stains, where it is not possible to use PC concentrates.

PLUS concentrates

PLUS concentrates are reactive dyes that react with the hydroxyl groups of cellulose in wood. In combination with the EKOHEL PLUS binder, they create a nice appearance of the wood staining and are used for staining coniferous wood. Due to their specificity and different mechanism, they are less concentrated than typical dyes (e.g. UN concentrates).

CC concentrates

CC Concentrates are dyes with a slightly lower color yield, but are well soluble in a wide range of solvents, with the exception of solvents such as petrol, xylene, etc. They are mostly used in stains, where cheaper distillates and various solvent mixtures are used.



CONCENTRATE SW YELLOW



CONCENTRATE SW BROWN



CONCENTRATE KPE WHITE



CONCENTRATE KPE LEMON YELLOW



CONCENTRATE SW ORANGE



CONCENTRATE SW BLACK



CONCENTRATE KPE ORANGE



CONCENTRATE KPE BLUE



CONCENTRATE SW RED



CONCENTRATE KPE RED



CONCENTRATE KPE BROWN



CONCENTRATE SW BORDEAUX



CONCENTRATE KPE BORDEAUX



CONCENTRATE KPE BLACK



CONCENTRATE PLUS LEMON YELLOW



CONCENTRATE PLUS TURQUOISE



CONCENTRATE CC YELLOW



CONCENTRATE CC BROWN



CONCENTRATE PLUS YELLOW



CONCENTRATE PLUS BLUE



CONCENTRATE CC ORANGE



CONCENTRATE CC BLACK



CONCENTRATE PLUS ORANGE



CONCENTRATE PLUS BROWN



CONCENTRATE CC RED



CONCENTRATE PLUS RED



CONCENTRATE PLUS BLACK

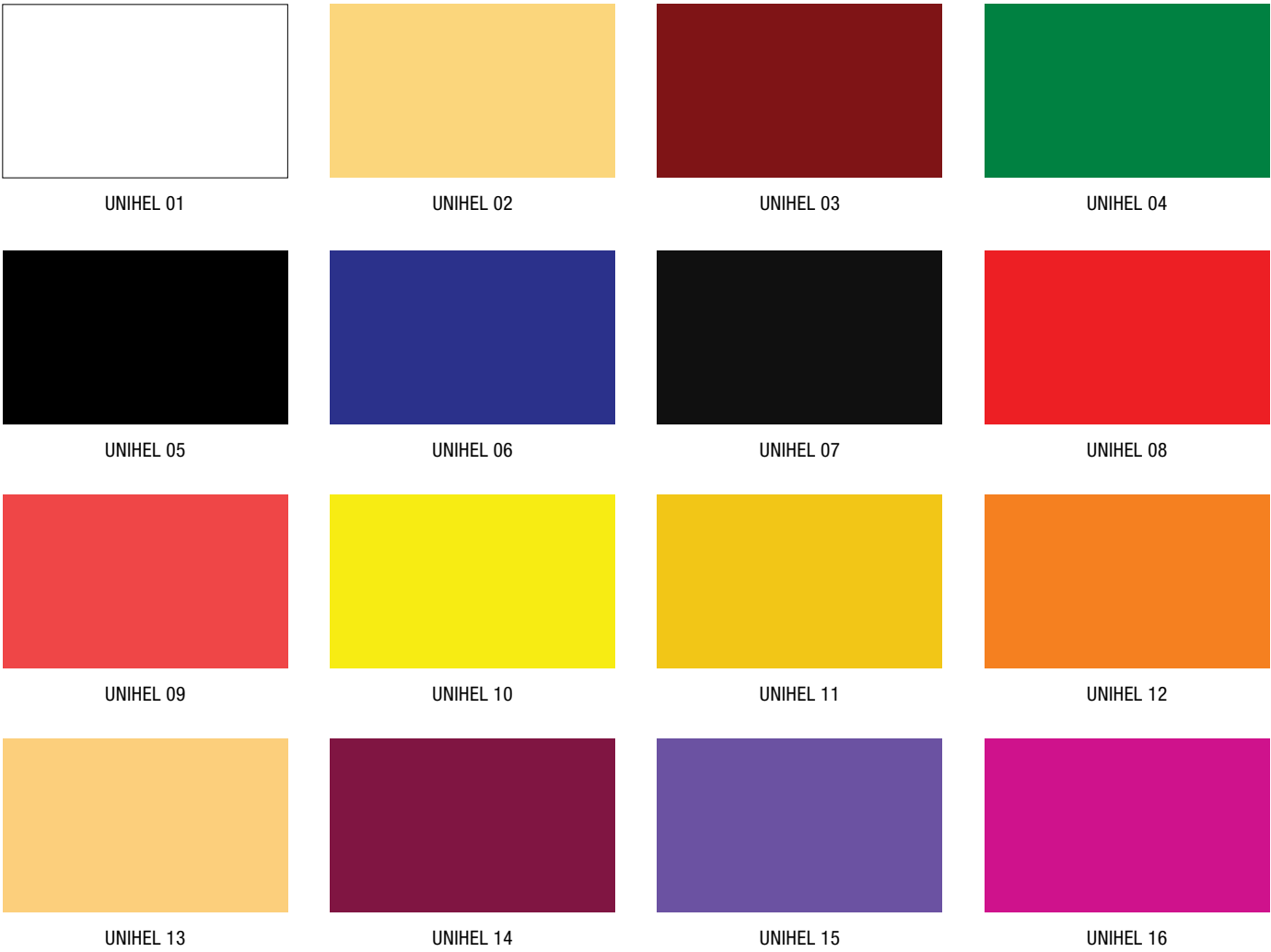


CONCENTRATE CC GREEN

UNIHEL pastes

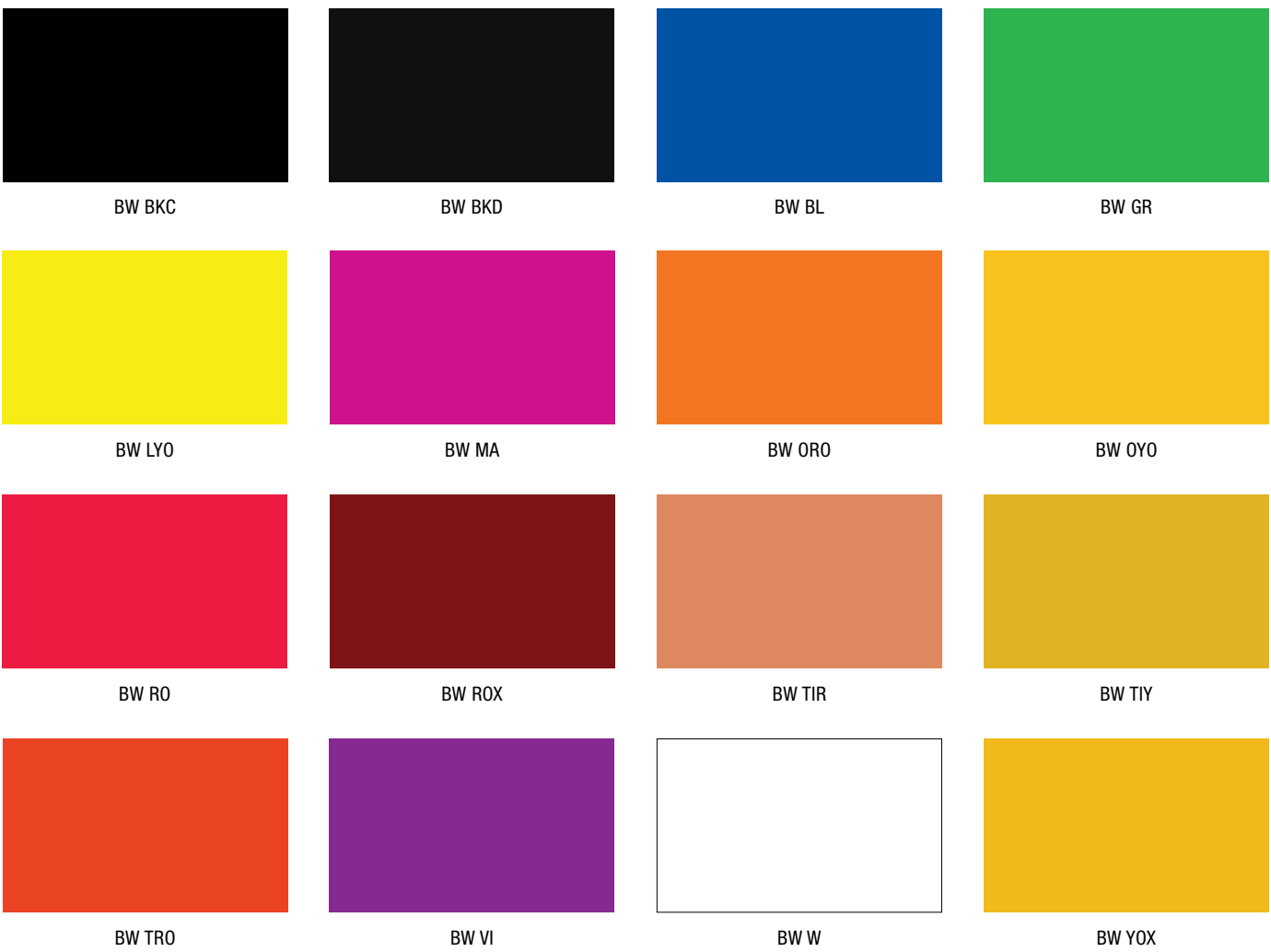
UNIHEL pastes are pigment preparations based on binders, pigment particles and solvents. They are intended for use in a wide range of combinations of solvents and binders.

Due to their non-transparency and hiding power, they are mainly used in the production of solvent-based stains for spreading and spraying in combination with UN concentrates. This achieves the correct ratio between coverage, strength and transparency. They can be used in combination with dyes and for the production of pastel shades.



BW colorants

BW colorants are water-based pigment pastes. In water-based stains, they are used primarily for the production of shades that cannot be achieved with dyes (e.g. green, blue, white), and for the preparation of pastel shades. By using BW Colorants, we achieve a semi-transparent to covered effect, which is why we use them to smoothen and cover differences in wood. Because some of the pigment particles are fairly large (e.g. white, ochre, oxide red) and have a tendency to sediment in a very rare medium such as a water-based stain, such stains should be mixed well before use (mechanical mixing, shaking).





BINDERS

Binders are carriers that evenly distribute the colorants on the surface of the woodwork and partly provide for their fixation onto the wood, which can be purely physical (NC) or chemical (acrylic, PU). Nitrocellulose (physical and quick), polyurethane (crosslinking with a hardener) and oil (slow, but spreadable) binders are used in solvent-based stains; primarily acrylic and styrene-acrylic binders (self-crosslinking dispersions) are used in water-based stains.

Binders for patinas

Binders for patinas KOMBIHEL patina base BEC - is a solvent-based binder for patina for removal. The patina from the base BEC is prepared with KPE concentrates. The prepared patina must be thinned with Thinner A in a ratio of 1:3 to 1:5 before use. The patina is not suitable for shading.

KOMBIHEL patina base white B - is a white solvent-based patina for removal. It can also be used to prepare pastel tones. KPE concentrates can be used for shading.

Binders for solvent-based stains

KOMBIHEL base S - is suitable for the preparation of stains for spraying. We recommend a dosage of 20-100%. For dry spraying, we recommend thinning with Thinner A; for more transparent wood we also recommend adding approx. 30% Thinner KV to Thinner A, for the better flow coating of pores.

KOMBIHEL base BL – is the base for stains for spreading and wiping. It is intended for the treatment of porous wood, such as oak, ash, etc., where the pores stain more strongly than the rest of the wood. The effect of old / antique furniture can be achieved with these stains. Thinning is not required, but it can be thinned with the thinner KV and slow thinner 2-5. Because it is often combined with UNIHHEL pastes, it also contains an anti-pigment agent. It must be mixed thoroughly before use.

Binders for water-based stains

EKOHEL binder IWE 18 – is a binder intended for the preparation of stains for spraying; it can also be used for other types of application. We recommend a dosage of 20-35%, most often in a ratio of 1:4 in water. The binder contains all the necessary additives, as well as an anti-pigment agent, and must be mixed thoroughly before use.

EKOHEL binder XL – is suitable for the preparation of stains for dipping and flow coating, because it prevents patchiness. We recommend adding 30% of binder to water. The binder contains all the necessary additives, including an anti-pigment agent, which is why EKOHEL binder XL must be mixed thoroughly before use.

EKOHEL binder V – is the base for the preparation of stains for rolling on industrial lines, where it fully colors also porous wood, such as ash and oak. The binder does not need to be thinned; depending on the workpiece, additives for improving the application properties can be used. The binder already contains most of the necessary additives. We recommend adding anti-pigment agents when using pigment pastes (BW colorants).

EKOHEL binder PLUS – the binder is intended for the preparation of positive stains for use on coniferous wood. The most pronounced effect of positive staining is achieved by spraying and drying at room temperature; brush application is also possible. For a positive effect, shading with PLUS concentrates is required. We recommend thinning with water by 10%. The binder must be mixed thoroughly before use.

EKOHEL binder PLUS WAX TR – the binder with added wax is used for the preparation of positive wax stains on coniferous wood. The binder and produced stains are used in the same way as EKOHEL PLUS stains, with the exception that after drying, EKOHEL PLUS WAX is polished with a dry cloth and not lacquered. Finished surfaces have a smooth, waxy effect. If requiring a higher level of protection, a colorless varnish should be applied to the surface.

EKOHEL binder SW – the binder on acrylic dispersion is intended for the preparation of stains with SW concentrates for application of dipping, flow-coating and spraying, which creates a more even staining effect. We recommend thinning with water 1:1 before applying. The binder cannot be combined with BW colorants.



THINNERS AND ADDITIVES

Thinners

Thinner A – quick, volatile thinner. It is used in stains for dry spraying. We recommend additional thinning just before use, because adding a thinner can cause colorants to destabilize in some systems.

Thinner KV – semi-volatile thinner. It is a thinner for stains where the wood needs to be additionally wetted.

Thinner 2-5 – slow, involatile thinner. It is used to extend the drying time when staining by spreading and wiping, and for staining large furniture pieces (e.g. door panels). Drying time is extended with the use of thinner 2-5. If the stain is not completely dry, it can soften the varnish in the wood pores, which leads to gluing.

Additives

EKOHEL antifoam – is an agent for de-foaming water-based stains – it is mainly used with rolling and dipping.

EKOHEL preservative – used to prevent the reproduction of microorganisms in Ekohel stains and other water-based coating products, where there is a greater likelihood of contamination with microorganisms due to the mode of work (dipping, flow coating, water curtains).

PATINAS
ARE USED
TO ACHIEVE
SPECIAL
EFFECTS AND
TO FURTHER
ENRICH THE
WOOD. THEY
ARE AVAILABLE
IN VARIOUS
SHADES.

CHARACTERISTICS

Colorant characteristics (colorant stability in different media)

	WATER	SOLVENTS				CHARACTERISTICS				
	WATER	ORGANIC SOLVENTS	ETHANOL	ACETONE	DISTILLATE*	INTENSITY	LIGHT RESISTANCE	TRANSPARENCY	COVERAGE	SHADE PURITY
COLORANTS										
UN concentrates	++	+	+	–	–	++	+	++	+	++
SW concentrates	o	++	++	++	+	++	+	++	+	++
CC concentrates	–	++	++	++	++	+	+	++	+	++
PLUS concentrates	++	–	–	–	–	+	+	++	+	++
PIGMENTS										
PC concentrates	–	++	o	o	+	+	+	++	++	++
KPE concentrates	–	+	++	o	+	+	+	++	++	++
UNIHEL pastes	–	++	o	+	+	+	++	+	++	+
BW colorants	++	–	–	–	–	+	++	+	++	+

PROPERTY DESIGNATION: ++ Excellent, + Appropriate, o Conditionally appropriate, – Inappropriate

* depending on the composition

Purpose of the binders

	APPLICATION METHOD
SOLVENT-BASED BINDERS	
KOMBIHEL base S	Spraying
KOMBIHEL base BL	Spreading or spraying with wiping
KOMBIHEL patina base BEC	Spraying with removal
KOMBIHEL patina base white B	Spraying with removal
WATER-BASED BINDERS	
EKOHEL binder IWE 18	Spraying, dipping
EKOHEL binder XL	Dipping, flow coating
EKOHEL binder V	Rolling
EKOHEL binder PLUS	Spraying
EKOHEL binder PLUS WAX TR	Spraying with polishing
EKOHEL binder SW	Spraying, dipping

Application methods for stains and patinas

	APPLICATION				
	DRY SPRAYING	SPRAYING	SPREADING	DIPPING	ROLLING
STAINS					
KOMBIHEL S MIX	++	+	+	–	–
KOMBIHEL S OAK MIX	++	++	++	+	+
KOMBIHEL BL MIX	–	+	++	+	++
EKOHEL W MIX	+	++	+	++	++
KOMBIHEL P MIX	–	+	++	+	++
EKOHEL PLUS MIX	+	++	–	–	–
PATINAS					
KOMBIHEL patina MIX classic	++	+	–	–	–
KOMBIHEL patina MIX metallic	++	+	–	–	–
KOMBIHEL patina MIX metallic brilliance	++	+	–	–	–

PROPERTY DESIGNATION: ++ Excellent, + Good, - Inappropriate

STAINS

KOMBIHEL S MIX

KOMBIHEL stains for spraying S are suitable for staining wood with less visible pores, such as beech, cherry, walnut, maple, birch, pear wood, spruce, pine, among others. They are essentially intended for dry spraying, where they stain the surface of the wood and keep the texture visible. Ready-made stains are made on the basis of a nitrocellulose binder (**KOMBIHEL base S**), organic solvents and dyes (UN concentrates). They can contain volatile organic solvents, they are quick and easy to work with, and the finished products are distinguished by homogeneous shades.



KS 010 - 20



KS 010 - 10



KS 010 - 5



KS 020 - 20



KS 020 - 10



KS 020 - 5



KS 030 - 20



KS 030 - 10



KS 030 - 5



KS 040 - 20



KS 040 - 10



KS 040 - 5



KS 050 - 20



KS 050 - 10



KS 050 - 5



KS 060 - 20



KS 060 - 10



KS 060 - 5



KS 070 - 20



KS 070 - 10



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KS 090 - 20



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KS 090 - 5



KS 100 - 20



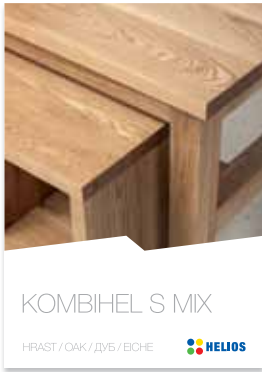
KS 100 - 10



KS 100 - 5

KOMBIHEL S OAK MIX

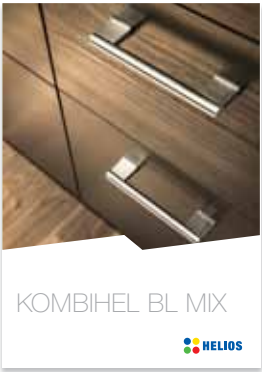
KOMBIHEL stains for spraying S OAK are suitable for staining larger or smaller wood surfaces with bigger pores, such as oak, ash and others. They are intended for spraying; they colour the wooden surface, evenly filling the pores, leaving the wooden texture visible. Ready-made stains are based on a nitrocellulose binder, volatile organic solvents (**KOMBIHEL BASE S**) and colorants. Working with them is quick and easy, because they are based on light and medium volatile organic solvents. The final look reflects homogeneous and perfect shades, which adds value to the end-products.



The featured shades are informative.

KOMBIHEL BL MIX

KOMBIHEL stains for spreading BL are suitable for staining larger or smaller wood surfaces with more distinct pores, such as oak, ash, and others. They are essentially intended for spreading and wiping, where they stain the surface of the wood, evenly fill the pores and keep the texture visible. Ready-made stains are made on the basis of a nitrocellulose binder, organic solvents (**KOMBIHEL base BL**), and dyes and pigments. Because they contain semi- and in-volatile organic solvents, spreading and wiping is easy, and the finished appearance is a transparent shade.

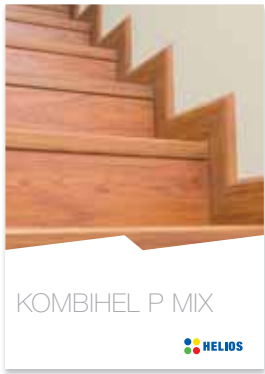


The featured shades are informative.

KOMBIHEL P MIX

KOMBIHEL stains P are suitable for staining larger or smaller wood surfaces with more distinct pores, such as oak, ash, and others. They are essentially intended for spreading and wiping, where they stain the surface of the wood, evenly fill the pores and keep the texture visible. If Thinner A is added to the Kombihel P stain, other wood types can also be stained by spraying. Ready-made stains are made on the basis of a nitrocellulose binder, organic solvents, and dyes and pigments.

Ready-made stains from the P MIX color chart are prepared by mixing in UN concentrates and PC concentrates in the **KOMBIHEL binder BL**, in the prescribed ratio (see the formulation in the appendix). On previously well-sanded wooden workpieces that are free from dust or other impurities, apply the stains by spreading with a cloth. For large surfaces, we recommend spraying. Immediately after application, evenly wipe the stain with a clean dry cloth. This achieves a clean shade with darker pronounced pores. Dried stains must be lacquered, for which you can use most commonly used coatings. 14 stains on two wood types (beech and oak) are presented on the color chart.



P10B



P11B



P17B



P21B



P30B



P33B



P35B



P36B



P37B



P40B



P43B



P44B



P45B



P46B



P10H



P11H



P17H



P21H



P30H



P33H



P35H



P36H



P37H



P40H



P43H



P44H



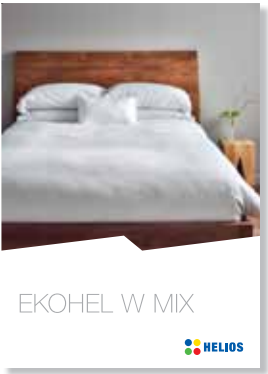
P45H



P46H

EKOHEL W MIX

EKOHEL W stains are suitable for staining all wood types, where they stain the surface of the wood and keep the texture visible. Because the stains are water-based, they are environmentally- and user-friendly. In order to ensure the highest quality stain effect with different applications, instead of the **EKOHEL binder IWE 18**, you can use a more suitable alternative (EKOHEL binder XL for dipping, EKOHEL base V for rolling, etc.) You must consult a Helios instructor before use.



EW 001 - 20



EW 001 - 10



EW 051 - 20



EW 051 - 10



EW 011 - 20



EW 011 - 10



EW 061 - 20



EW 061 - 10



EW 021 - 20



EW 021 - 10



EW 071 - 20



EW 071 - 10



EW 031 - 20



EW 031 - 10



EW 081 - 20



EW 081 - 10



EW 041 - 20



EW 041 - 10



EW 091 - 20



EW 091 - 10

The featured shades are informative.

EKOHEL PLUS MIX

EKOHEL stains PLUS are intended for staining coniferous woods, such as spruce, pine, larch, etc. Their main purpose is a positive way of staining, which emphasizes late hard wood, while the softer early wood is only gently stained. Their main purpose is to gently color the surface of the wood, and to emphasize the texture and keep it visible. Positive stains are produced on the basis of binder (**EKOHEL binder PLUS**), water and dyes. Because the stains are water-based, they are environmentally- and user-friendly. Positive stains are more dense or thixotropic, so that it is easier to achieve an appropriate positive effect. Due to the possible deterioration of the positive effect, we do not recommend excessive thinning (max. 10 %). The stain must be mixed thoroughly before use.



EP 201



EP 202



EP 203



EP 204



EP 205



EP 206



EP 207



EP 208



EP 209



EP 210



EP 211



EP 212



EP 213



EP 214

The featured shades are informative.

KOMBIHEL PATINA MIX CLASSIC

KOMBIHEL patinas CLASSIC are used to achieve special effects and to further enrich the wood. They can be used to stain wood pores, grooves and highlight intentional damage for the production of antique furniture.

The patinas are sprayed on lacquered and hardened surfaces that do not need to be sanded beforehand. We recommend the use of base PU lacquers; nitrocellulose and water-based lacquers can also be used. To achieve a homogenous appearance of the shade, we recommend dry spraying in at least two (crossover) rounds. The strength of the shade depends on the amount of patina applied, so the thinning and spraying method should be adjusted accordingly. After a short drying, remove most of the patina with a sanding sponge or iron wool, so it remains in the pores and grooves. Clean and dust the surface. Patina that is meant for removal is not adequate for shading and only has a decorative function, and so must be additionally painted over with lacquer.

The patinas are prepared by mixing the **KOMBIHEL patina BEC base** and KPE concentrates, in the ratio prescribed in the KOMBIHEL Patina MIX CLASSIC recipe table. The patina concentrate must be thinned before use, with Thinner A in a ratio that is suitable for the desired shade. We recommend thinning between 1:3 and 1:5, which is also presented in the color chart. It is also possible to thin in a random ratio and add new shades to the color chart, as desired. To achieve the appearance of scratched furniture or to make it harder to remove the patina, it can be thinned with HELIOCEL thinner 2755, or by adding a small amount of HELIOCEL lacquer (1-3%).

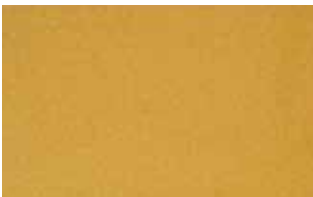


1:3	1:5	1:3	1:5
C 101 - 3	C 101 - 5	C 104 - 3	C 104 - 5
C 102 - 3	C 102 - 5	C 105 - 3	C 105 - 5
C 103 - 3	C 103 - 5	C 106 - 3	C 106 - 5

1:3	1:5	1:3	1:5
C 107 - 3	C 107 - 5	C 110 - 3	C 110 - 5
C 108 - 3	C 108 - 5	C 111 - 3	C 111 - 5
C 109 - 3	C 109 - 5	C 112 - 3	C 112 - 5

KOMBIHEL PATINA MIX METALLIC

KOMBIHEL patinas METALLIC are used to achieve special effects and to further enrich the wood. They can be used to stain wood pores, grooves and highlight intentional damage for the production of design furniture, and thus appear to increase the value. The patinas are sprayed on lacquered and hardened surfaces that do not need to be sanded beforehand. We recommend the use of PU base lacquers, which must be well dried and hardened beforehand. To achieve a homogenous appearance of the shade, we recommend dry spraying in at least two (crossover) rounds.



478443



478265



478444



M 501



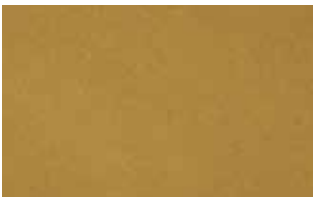
M 502



M 503



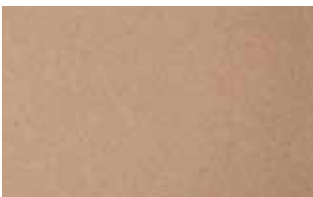
M 504



M 505



M 506



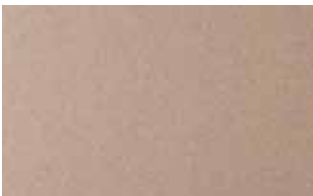
M 507



M 508



M 509



M 510



M 511



M 512

The metallic effect of the shade depends on the amount of patina applied, so the spraying method should be adjusted accordingly. After a short drying, remove most of the patina with a sanding sponge or iron wool, so it remains in the pores and grooves. Clean the surface to remove any dust. Patina that is meant for removal is not adequate for shading and only has a decorative function, and so must be additionally painted over with lacquer.

Patinas from the color chart are prepared by mixing three basic metal shades of KOMBIHEL patinas B (gold, yellow gold and silver) in the prescribed ratio. The basic shades can also be used independently.

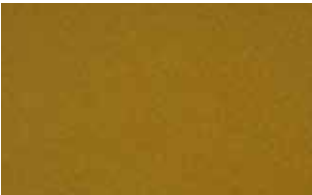
Because the metal pigments are relatively large and heavy, it is necessary to mix the Kombihel metallic patinas thoroughly before and during use, so that the desired shade and coverage do not change during work. Thinning prior to use is not required.

The featured shades are informative.

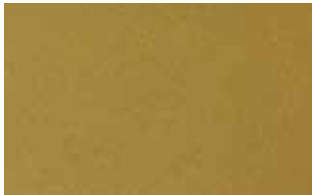
KOMBIHEL patinas METALLIC BRILLIANCE are suitable for special effects and further enrich the wood, e.g. gilding furniture grooves. They are intended for the patination of already base-lacquered wooden surfaces, from which they are mostly removed (sanded), so that they remain only in grooves and pores of the wood. Patina that is meant for removal is not adequate for shading and only has a decorative function, and so must be additionally painted over with lacquer. The patinas Kombihel Metallic Brilliance must be thinned with Thinner A in a ratio of 1:3 to 1:5 before use.



MB 601



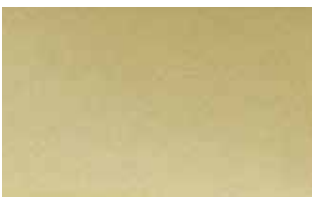
MB 602



MB 603



MB 604



MB 605



MB 606



MB 607



MB 608



MB 609



MB 610



MB 611



MB 612

The featured shades are informative.

KOMBIHEL S MIX RECIPES

KOMBIHEL S MIX		KS 010 - 20	KS 020 - 20	KS 030 - 20	KS 040 - 20	KS 050 - 20	KS 060 - 20	KS 070 - 20	KS 080 - 20	KS 090 - 20	KS 100 - 20
419656	KOMBIHEL BASE S	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00
407615	THINNER A	798,48	784,67	772,76	773,81	762,86	792,14	764,76	772,00	757,14	757,14
403950	CONCENTRATE UN YELLOW	0,67	7,62	4,19	2,38		4,05	11,90	5,71	3,10	
403951	CONCENTRATE UN ORANGE	0,43	5,05		2,86		0,48	6,19	11,05	4,76	
403952	CONCENTRATE UN RED	0,10	1,71	17,81		12,38				2,38	
403953	CONCENTRATE UN BORDEAUX				13,10	5,71		1,43			
403954	CONCENTRATE UN BROWN	0,33		5,24	7,86	10,95		15,71	11,24	27,14	16,67
403955	CONCENTRATE UN BLACK		0,95			8,10	3,33			5,48	26,19
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL S MIX		KS 010 - 10	KS 020 - 10	KS 030 - 10	KS 040 - 10	KS 050 - 10	KS 060 - 10	KS 070 - 10	KS 080 - 10	KS 090 - 10	KS 100 - 10
419656	KOMBIHEL BASE S	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00
407615	THINNER A	797,09	770,73	748,00	750,00	729,09	785,00	732,73	746,55	718,18	718,18
403950	CONCENTRATE UN YELLOW	1,27	14,55	8,00	4,55		7,73	22,73	10,91	5,91	
403951	CONCENTRATE UN ORANGE	0,82	9,64		5,45		0,91	11,82	21,09	9,09	
403952	CONCENTRATE UN RED	0,18	3,27	34,00		23,64				4,55	
403953	CONCENTRATE UN BORDEAUX				25,00	10,91		2,73			
403954	CONCENTRATE UN BROWN	0,64		10,00	15,00	20,91		30,00	21,45	51,82	31,82
403955	CONCENTRATE UN BLACK		1,82			15,45	6,36			10,45	50,00
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

APPENDIX

KOMBIHEL S MIX		KS 010 - 5	KS 020 - 5	KS 030 - 5	KS 040 - 5	KS 050 - 5	KS 060 - 5	KS 070 - 5	KS 080 - 5	KS 090 - 5	KS 100 - 5
419656	KOMBIHEL BASE S	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00
407615	THINNER A	794,67	746,33	704,67	708,33	670,00	772,50	676,67	702,00	650,00	650,00
403950	CONCENTRATE UN YELLOW	2,33	26,67	14,67	8,33		14,17	41,67	20,00	10,83	
403951	CONCENTRATE UN ORANGE	1,50	17,67		10,00		1,67	21,67	38,67	16,67	
403952	CONCENTRATE UN RED	0,33	6,00	62,33		43,33				8,33	
403953	CONCENTRATE UN BORDEAUX				45,83	20,00		5,00			
403954	CONCENTRATE UN BROWN	1,17		18,33	27,50	38,33		55,00	39,33	95,00	58,33
403955	CONCENTRATE UN BLACK		3,33			28,33	11,67			19,17	91,67
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL S MIX RECIPES FROM CONCENTRATES

1:5

add 200 g of concentrate per 1000 g of MIX S Base

1:10

add 100 g of concentrate per 1000 g of MIX S Base

1:20

add 50 g of concentrate per 1000 g of MIX S Base

		CONCENTRATES									
CONCENTRATE KOMBIHEL S MIX		KS 010	KS 020	KS 030	KS 040	KS 050	KS 060	KS 070	KS 080	KS 090	KS 100
403950	CONCENTRATE UN YELLOW	14	160	88	50		85	250	120	65	
403951	CONCENTRATE UN ORANGE	9	106		60		10	130	232	100	
403952	CONCENTRATE UN RED	2	36	374		260				50	
403953	CONCENTRATE UN BORDEAUX				275	120		30			
403954	CONCENTRATE UN BROWN	7		110	165	230		330	236	570	350
403955	CONCENTRATE UN BLACK		20			170	70			115	550
407635	THINNER KV	968	678	428	450	220	835	260	412	100	100
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

		MIX S BASE
419656	KOMBIHEL BASE S	200
407615	THINNER A	800
		1000

KOMBIHEL S MIX stain is prepared by diluting a selected colour shade concentrate from the colour card with MIX S base.

KOMBIHEL S MIX OAK RECIPES

KOMBIHEL S MIX OAK		KSO 301	KSO 302	KSO 303	KSO 304	KSO 305	KSO 306	KSO 307	KSO 308	KSO 309	KSO 310	KSO 311	KSO 312
419656	KOMBIHEL BASE S	200	200	200	200	200	200	200	200	200	200	200	200
407635	THINNER KV	300	300	300	300	300	300	300	300	300	300	300	300
407615	THINNER A	350	496	474	433	450	449	390	485	470	425	356	350
403950	CONCENTRATE UN YELLOW		2	10,5	22	15	5		8	15	5	60	
403951	CONCENTRATE UN ORANGE		1	9	12	22	6		1	5	10	20	
403952	CONCENTRATE UN RED			0,5				20			15		
403953	CONCENTRATE UN BORDEAUX				3	3	25	80					
403954	CONCENTRATE UN BROWN		1	6	30	10	15	10			40	60	
403955	CONCENTRATE UN BLACK								6	10	5	4	150
479052	CONCENTRATE PC WHITE	150											
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL P MIX RECIPES

KOMBIHEL P MIX		P 10	P 11	P 17	P 21	P 30	P 33	P 35	P 36	P 37	P 40	P 43	P 44	P 45	P 46
406723	KOMBIHEL BASE BL	772,4	609,6	944,5	857,7	853,8	566	739	568	643	985,7	765	735	893,5	589,3
403950	CONCENTRATE UN YELLOW	4,6	21,3	6	6,5	24,5	33	41	18,5	12	2,7	34	51,7	6	44
403951	CONCENTRATE UN ORANGE	16	24,8		1,6	4,8	80	36				7	12,1	3	44
403952	CONCENTRATE UN RED	8	17,3			1,3	43	17	62,5	22,4					29
403953	CONCENTRATE UN BORDEAUX						35		53	66,7					
403954	CONCENTRATE UN BROWN		76			3	33	29	44	22,4		4			46,7
403955	CONCENTRATE UN BLACK														
479052	CONCENTRATE PC WHITE	20	79	47	36,6	20,5	30	63	100	100		50			63,4
479055	CONCENTRATE PC YELLOW					46,5						20			
479051	CONCENTRATE PC BROWN	148	84	2,5	85,4	45,6	70	43	116	100	10	70	116	90	88,6
479050	CONCENTRATE PC BLACK	31	88		12,2		110	32	38	33,5	1,6	50	85,2	7,5	95
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL BL MIX RECIPES

KOMBIHEL BL MIX		KBL 401	KBL 402	KBL 403	KBL 404	KBL 405	KBL 406	KBL 407	KBL 408	KBL 409	KBL 410	KBL 411	KBL 412	KBL 413	KBL 414
406723	KOMBIHEL BASE BL	903	792,9	957,6	917,1	870,2	645,8	914,6	904,3	770	831,6	859,6	821,8	700	724,2
406924	UNIHEL PASTE 01 WHITE			13,6				14,9	9,6			28,3	14,6	35,8	
406926	UNIHEL PASTE 02 OCHRE	30		22,5	46,3	34,4	20,5	49,2		32,5			16,4	15,3	
406927	UNIHEL PASTE 03 OXS. RED		17,5				7,6	10,5		17,7	34,7	4	2,9	7,2	33,8
406907	UNIHEL PASTE 07 BLACK	38	58	6,3			62,3	7,6	16,7		66	23,6		14,2	46,1
406910	UNIHEL PASTE 10 YELLOW		33,8						11,8			20,6	27,8		
406912	UNIHEL PASTE 12 ORANGE								29,6			48	34,7		
403950	CONCENTRATE UN YELLOW	10,5	32,6		11,1	16,5	49,1	3,2	9,9	78	10	3,7			
403951	CONCENTRATE UN ORANGE				6,6	10,1			9,9	25,3	26,7	12,2	65,6	148	
403952	CONCENTRATE UN RED		10,9				30,7			13				40,8	90,9
403953	CONCENTRATE UN BORDEAUX													2,7	35
403954	CONCENTRATE UN BROWN	18,5	54,3		14,8	41,3	92		8,2	63,5	31		16,2	26,7	
403955	CONCENTRATE UN BLACK				4,1	27,5	92							9,3	70
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

EKOHEL W MIX RECIPES

EKOHEL W MIX		EW 001 - 20	EW 011 - 20	EW 021 - 20	EW 031 - 20	EW 041 - 20	EW 051 - 20	EW 061 - 20	EW 071 - 20	EW 081 - 20	EW 091 - 20
418881	EKOHEL binder IWE 18	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00
	WATER	797,52	768,71	753,67	752,38	791,62	780,43	783,67	752,38	766,43	752,38
403950	CONCENTRATE UN YELLOW	0,67	9,67			4,67	8,76	4,38	17,19		
403951	CONCENTRATE UN ORANGE	1,43	16,19		9,05	1,86	5,48	1,24	10,10	4,19	
403952	CONCENTRATE UN RED		0,67	26,19			0,57	0,62		1,90	6,67
403953	CONCENTRATE UN BORDEAUX			3,48	36,19					1,00	
403954	CONCENTRATE UN BROWN	0,38	3,48	13,33	2,38	1,86	4,76	6,95	20,33	21,43	9,05
403955	CONCENTRATE UN BLACK		1,29	3,33				3,14		5,05	31,90
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

EKOHEL W MIX		EW 001 - 10	EW 011 - 10	EW 021 - 10	EW 031 - 10	EW 041 - 10	EW 051 - 10	EW 061 - 10	EW 071 - 10	EW 081 - 10	EW 091 - 10
418881	EKOHEL binder IWE 18	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00	200,00
	WATER	795,27	740,27	711,55	709,09	784,00	762,64	768,82	709,09	735,91	709,09
403950	CONCENTRATE UN YELLOW	1,27	18,45			8,91	16,73	8,36	32,82		
403951	CONCENTRATE UN ORANGE	2,73	30,91		17,27	3,55	10,45	2,36	19,27	8,00	
403952	CONCENTRATE UN RED		1,27	50,00			1,09	1,18		3,64	12,73
403953	CONCENTRATE UN BORDEAUX			6,64	69,09					1,91	
403954	CONCENTRATE UN BROWN	0,73	6,64	25,45	4,55	3,55	9,09	13,27	38,82	40,91	17,27
403955	CONCENTRATE UN BLACK		2,45	6,36				6,00		9,64	60,91
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

EKOHEL W MIX RECIPES FROM CONCENTRATES

1:10

add 100 g of concentrate per 1000 g of MIW W Base

1:20

add 50 g of concentrate per 1000 g of MIW W Base

		KONCENTRATI									
CONCENTRATE EKOHEL W MIX		EW 001	EW 011	EW 021	EW 031	EW 041	EW 051	EW 061	EW 071	EW 081	EW 091
403950	CONCENTRATE UN YELLOW	14	203			98	184	92	361		
403951	CONCENTRATE UN ORANGE	30	340		190	39	115	26	212	88	
403952	CONCENTRATE UN RED		14	550			12	13		40	140
403953	CONCENTRATE UN BORDEAUX			73	760					21	
403954	CONCENTRATE UN BROWN	8	73	280	50	39	100	146	427	450	190
403955	CONCENTRATE UN BLACK		27	70				66		106	670
407635	REDČILO KV	948	343	27		824	589	657		295	
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

		MIX W BASE
418881	BINDER IWE 18	200
WATER		800
		1000

EKOHEL W MIX is prepared by diluting a selected colour shade concentrate from the colour card IN MIX W base.

EKOHEL PLUS MIX RECIPES

EKOHEL PLUS MIX		EP 201	EP 202	EP 203	EP 204	EP 205	EP 206	EP 207	EP 208	EP 209	EP 210	EP 211	EP 212	EP 213	EP 214
480800	EKOHEL BINDER PLUS	879	820	861	773	849	824	883	877	875	823	870	805	862	728
	WATER	98	91	96	86	94	92	98	98	97	92	97	90	96	81
472223	COLORANT BW W											4			
480802	CONCENTRATE PLUS LEMON YELLOW														
480803	CONCENTRATE PLUS YELLOW	8	37	15	47	26									
480804	CONCENTRATE PLUS ORANGE						22								
480805	CONCENTRATE PLUS RED		8		16	5	33	1	3			1			5
480806	CONCENTRATE PLUS TURQUOISE											1			
480807	CONCENTRATE PLUS BLUE														
480808	CONCENTRATE PLUS BROWN	15	44	28	78	26	22	18	22	27	85	24	102	37	177
480809	CONCENTRATE PLUS BLACK						7			1		3	3	5	9
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL PATINA MIX CLASSIC RECIPES

1:3

add 100 g of patina concentrates per 300 g Thinner A

1:5

add 100 g of patina concentrates per 500 g Thinner A

KOMBIHEL PATINA MIX CLASSIC (for sanding)		C 101	C 102	C 103	C 104	C 105	C 106	C 107	C 108	C 109	C 110	C 111	C 112
480058	KOMBIHEL PATINA BASE BEC	650	650	650	650	650	650	650	650	650	650	650	650
478280	CONCENTRATE KPE WHITE	328	300	230		100					60	269	
478281	CONCENTRATE KPE LEMON YELLOW	14	7	30	225					100		58	
478282	CONCENTRATE KPE ORANGE				25								
478283	CONCENTRATE KPE RED						40	40			60		105
478284	CONCENTRATE KPE BROWN	8	40	90	100	250	230	280	300	200			80
478285	CONCENTRATE KPE BLACK		3				30	30	50	50	30	11,5	15
478286	CONCENTRATE KPE BORDEAUX						50						150
478271	CONCENTRATE KPE BLUE										200	11,5	
		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

KOMBIHEL PATINA MIX CLASSIC is prepared in the form of a concentrate using a base and pigment pastes. Prior to use the patina concentrate must be diluted by Thinner A in the ratio defined for a desired colour shade. We recommend a dilution ratio from 1:3 to 1:5, which is indicated also in the colour card.

KOMBIHEL PATINA MIX METALLIC RECIPES

KOMBIHEL PATINA MIX METALLIC (for sanding)		M 501	M 502	M 503	M 504	M 505	M 506
478443	KOMBIHEL patina gold B	910	657	400	800	450	200
478444	KOMBIHEL patina silver B	90		600	200		600
478265	KOMBIHEL patina yellow gold B		343			550	200
		1000	1000	1000	1000	1000	1000

KOMBIHEL PATINA MIX METALLIC (for sanding)		M 507	M 508	M 509	M 510	M 511	M 512
478443	KOMBIHEL patina gold B	700	167	200	600		
478444	KOMBIHEL patina silver B	300		400	400	90	600
478265	KOMBIHEL patina yellow gold B		833	400		910	400
		1000	1000	1000	1000	1000	1000

KOMBIHEL PATINA MIX METALLIC (for sanding)		478443	478265	478444
478443	KOMBIHEL patina gold B	1000		
478444	KOMBIHEL patina silver B			1000
478265	KOMBIHEL patina yellow gold B		1000	
		1000	1000	1000



ISO 9001
ISO 14001
BUREAU VERITAS
Certification



Ver. 001

393345

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