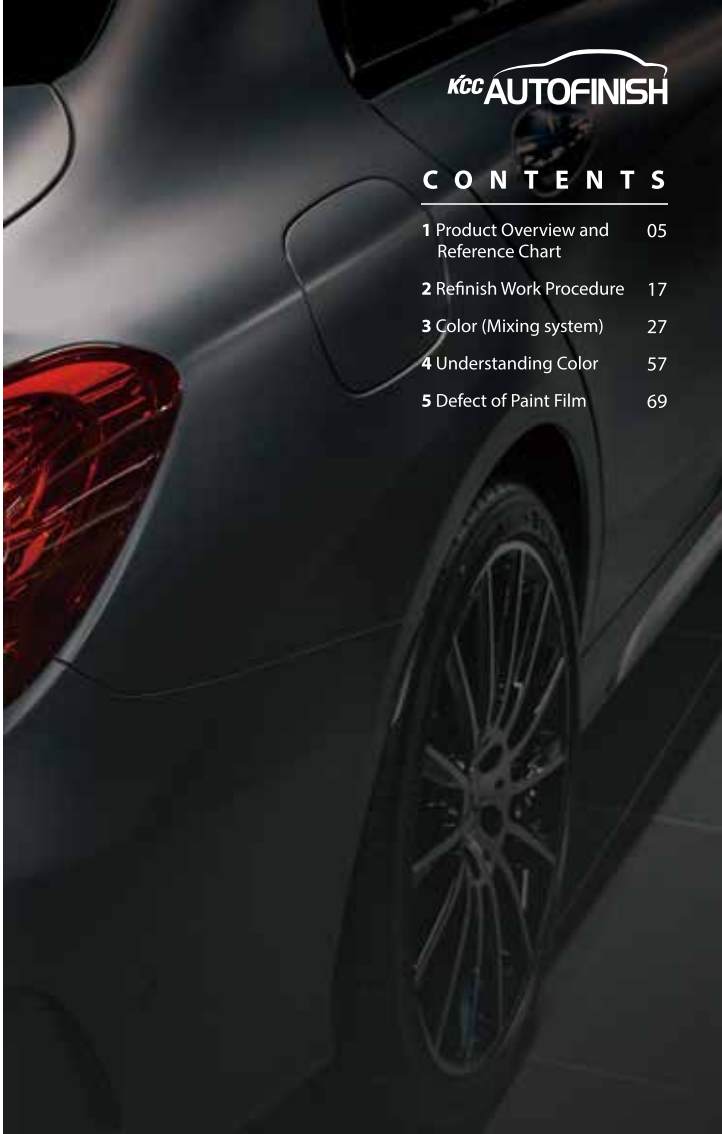


KCC AUTOFINISH

CONTENTS

Convenient website constructed for the users

Refinish website

The recently renewed refinish website does not only offer the ability to check the work hours by car model/part along with paint consumption amount but it has also reinforced the color comparison/search function, and individual data management capabilities significantly.

Color search for color mixture

Color comparison function

KCC AUTOFINISH

1 Product Overview and Reference Chart

Surface Preparation

Product name	Product Information	Purpose
ZY0950	Regular degreaser	For pre-treatment work before and after sanding
Prime cleaner	High quality degreaser	For pre-treatment work before and after sanding
Antistatic cleaner	Antistatic cleaner	Antistatic cleaner for plastic materials
K070	Water soluble degreaser	Apply prior to water soluble paint application

Wash Primer

Main Agent	Curing Agent	Mixing Ratio	Remark
VP1100	VP1100-B	2 : 1	Paint over metal plate area exposed during polishing

Putty

Main Agent	Curing Agent	Mixing Ratio	Remark
Speed Putty	N/A	100	Single Liquid Type Lacquer Putty
Super Plus Putty (F/ M)	928(T)C.A	100 : 1~3	Polyester Putty
Smart Putty(F/ M)	928(T)C.A	100 : 1~3	Polyester Putty
Prime Putty	CA2015(T) / (S)	100 : 1~3	Multipurpose Putty
Prime Dispenser Putty	Drying Agent for Prime Dispenser Putty	100 : 1~3	Multipurpose Putty / Machine Type

* F : Fast dry, M : Medium Dry, S : Slow Dry

Primer

Main Agent	Curing Agent	Mixing Ratio	Remark
RP3000S	N/A	100	Silver particles included
RP3000C	N/A	100	Silver particles not included
RP3000-GREY	N/A	100	Grey color
WP1000-GREY	N/A	100 : 10~20% (Dilute with K040)	Grey color

Primer Surfacer

Product Information	Main Agent	Curing Agent	Thinner	Mixture Ratio
Epoxy Primer	EP3000-GREY	EP3000-B	TH0600 (F/ M / S)	6 : 1 : 2
Single Liquid Type Primer Surfacer	UU2000	N/A		100 : 80%
	Prime2000	N/A		100 : 80%
Two Component Primer Surfacer	UU3000	UU3000-B		100 : 20 : 30%
	Prime Surfacer (Black / Grey / White)	CA 221 (F/ M / S)		100 : 25 : 20~30%
	Prime-Nonsanding Surfacer (Black/White)	Primer Non-sanding Curing Agent		100 : 20 : 10~20%
Single Liquid Type Water Soluble Primer Surfacer	WS2000	N/A	K040 (Water soluble thinner)	100 : 10~20%

* F : Fast dry, M : Medium Dry, S : Slow Dry

Clear

Product Name	Curing Agent	Mixing Ratio	Thinner	Type
7500 HS CLEAR	7500 HS-B (F/ M / S)	2 : 1	5% (Below, When necessary)	High Solid
7200 HS	7200 HS-B (F/ M / S)	2 : 1	5% (Below, When necessary)	
5200 HS CLEAR	C.A520 (F/ M / S)	2 : 1		
5300 HS CLEAR	C.A530 (F/ M / S)	3 : 1		
5400 HS CLEAR	C.A540 (F/ M / S)	4 : 1		
PRIME PLUS	CA-Prime Plus (F/ M / S)	2 : 1		High Quality
9020 FC CLEAR	CA900 (F/ M / S)	2 : 1		High Quality
Multi-booster CLEAR	CA900(M)	2 : 1		Quick Dry
720 MS CLEAR	CA221 (F/ M / S)	2 : 1		Standard
MULTIPLUS		2 : 1		Standard
UT5750-A-9000(LV)		2 : 1		Standard
SENSE LV CLEAR	CA421 (F/ M / S)	4 : 1		Quick Dry
SMART CLEAR		4 : 1		Quick Dry
5100 LV PLUS CLEAR	CA101	10 : 1		Air-Dry & Curing
5100 LV PLUS CLEAR	CA421 (F/ M / S)	4 : 1		Matte Clear

* F : Fast dry, M : Medium Dry, S : Slow Dry

Other Products

Product Name	Mixing Ratio	
Smart Blending Thinner		Blending Thinner
ZY0935	10% ↓ of Color paint	Mottling Preventer
ZY0940	1% ↓ of Clear coat	Anti-pinhole Agent
Urethane Softener	15% ↓ of Clear coat (Main Agent)	Softener

REFINISH PRODUCT REFERENCE CHART

KCC AUTOFINISH

Category	Information	Application	Product Name		Thinner (Dilluent)	Mixing Ratio (Volume ratio, %)	Painting Viscosity	Pot Life (25℃)	Number of Painting Sessions	Complete Drying		Spray Gun (Nozzle/Pressure)		Solid Content Within Mixture (NV, %)
			Main Agent	Curing Agent						Air-Dry (25℃)	Force-Dry (60℃)	Nozzle	Gravity Type (Pressure)	
Putty	Lacquer Putty	For filling putty pockets and scratches	Speed Putty											
	Polyester Putty	General steel (CR base material)	Super Plus Putty	928(T)C.A		100 : 1~3 (Weight)		3~10 minutes		20~35 minutes (25℃)				96%
		General steel (CR base material)	Smart Putty	928(T)C.A		100 : 1~3 (Weight)		3~10 minutes (25℃)		15~30 minutes (25℃)				96%
	Multi-purpose Putty	General steel and non-metal base material	Prime Putty	CA2015(T), CA2015(T)(Slow)		100 : 1~3 (Weight)		3~5 minutes		15~30 minutes (25℃)				80~85%
		General steel and non-metal base material	Prime Dispenser Putty	Curing agent for prime dispenser putty				3~5 minutes		10~20 minutes (25℃)				80~85%
Primer	Wash Primer	Base material rust preventing wash primer	VP1100	VP1100-B		2 : 1	14~16sec	8 Hours						26%
	Epoxy Primer	Base material rust preventing epoxy primer (Commercial vehicles)	EP3000-GREY	EP3000-B	TH0600	6 : 1 : 2	18~24sec	6 Hours	2~3 Sessions		30 minutes (80℃)		1.8~2.0bar	55~60%
	PP Primer (Silver content)	CPO BUMPER base material PRIMER	RP3000S (Silver)				9~12sec		1~2 Sessions	10~15 minutes		1.2~1.4	1.5~2.0bar	5%
	PP Primer (Clear)	CPO BUMPER base material PRIMER	RP3000C (Clear)											
	PP Primer (Grey)	CPO BUMPER base material PRIMER	RP3000-Grey		TH0600	10%								
	Water Soluble PP Primer (Grey)	CPO BUMPER base material PRIMER	WP1000-Grey		K040	100 : 10~20%	35~45sec	6 Hours	1 Sessions					20%
Primer Surfacer	1K Surfacer	Electrostatic coating, OEM previous film, bumper applied with primer	UU2000		TH0600	100 : 80%	16~20sec		2~3 Sessions	30 minutes	5 minutes	1.3~1.6	1.5~2.0bar	58%
	1K Surfacer		Prime2000		TH0600	100 : 80%	16~20sec			10 minutes	5 minutes			60%
	1K Surfacer (Water soluble)		WS2000		K040	100 : 10~20%	20~24sec	Within 12 Hours		20~30 minutes (25℃)	10 minutes			55%
	2K Surfacer		UU3000	UU3000-B	TH0600	100 : 20 : 30%	15~17sec	4 Hours			20 minutes			66%
	2K Surfacer (Non-yellowing type)		Prime Surfacer (Black/White/Grey)	CA221 (F / M / S)		100 : 25 : 20~30%					15 minutes			70~74%
	2K Surfacer (Non-sanding type)		Prime Non-sanding Surfacer (Black/White)	Prime Non-sanding Curing Agent		100 : 20 : 10~20%	14~16sec	4 Hours (25℃)			20 minutes			70%
Color of Basecoat / Top coat	1K Base	Intermediate, OEM / Previous film for refinish	UT5901		TH0600	100 : 100 (minimum)	14~16sec	Within 2~3 Days	3~4 Sessions	10 minutes		1.2~1.4	1.8~2.0bar	27%
	2K Base (High Quality)		PRIME COAT	CA221 (F / M / S)		100 : 50 : 50%	16~18sec	3 Hours	2~3 Sessions		30 minutes			54%
	2K Base (Quick Dry)		UT5031	UT5031-B		100 : 33 : 35%	15~17sec	2 Hours			20 minutes			58%
	2K Base (Super Quick Dry)		UT545	CA101		100 : 10 : 50%	13~15sec	4 Hours			20 minutes			55%
Claer Coat	Premium VHS Clear Coat	Solvent-borne / Water soluble base, previous film	7500 HS CLEAR	7500 HS-B (F / M / S)	TH0600 (When necessary)	2 : 1 (Within 5%)	19~23sec	1.5 Hours	1.5~2 Sessions		40 minutes	1.2~1.4	1.8~2.2bar	58%
			7200 HS	7200 HS-B (F / M / S)	TH0600 (When necessary)	2 : 1 (Within 5%)	19~22sec	1~2.5 Hours			35 minutes			55%
	High Quality HS Clear		5200 HS CLEAR	CA520 (F / M / S)		2 : 1	16~18sec	1.5 Hours			35 minutes			Above 50%
	High Quality HS Clear (Semi-high quality)		5300 HS CLEAR	CA530 (F / M / S)		3 : 1	16~18sec	1.5 Hours			30 minutes			Above 50%
	High Quality HS Clear (Quick Dry)		5400 HS CLEAR	CA540 (F / M / S)		4 : 1	18~21sec	2 Hours			25 minutes			Above 48%
	High Quality MS Clear		PRIME PLUS CLEAR	CA-PrimePlus (F / M / S)		2 : 1	16~18sec	3 Hours	2~3 Sessions		30 minutes			47%
	Semi-high Quality MS Clear (Energy saving type)		9020 FC CLEAR	CA900(F)		2 : 1	16~20sec	1.5 Hours			20 minutes			47%
				CA900(M)							30 minutes			
				CA900(S)							35 minutes			
	General Purpose MS Clear (High viscosity)		Multi-booster CLEAR	CA900(M)		2 : 1	14~18sec	1.5 Hours			15 minutes			47%
	General Purpose MS Clear (Standard)		MULTIPLUS	CA221 (F / M / S)		2 : 1	14~16sec	3 Hours			30 minutes			43%
	General Purpose MS Clear (Economy type)		UT5750-A-9000(LV)			4 : 1	14~16sec	3 Hours						43%
	Quick Dry MS Clear		SMART CLEAR	CA421 (F / M / S)		4 : 1	16~17sec	2 Hours			25 minutes			45%
			SENSE LV CLEAR			4 : 1	15~17sec	3 Hours						42%
	Super Quick Dry MS Clear (Air-Dry)		5100 LV PLUS CLEAR	CA101		10 : 1	13~15sec	2 Hours			20 minutes			35%
	Matte Clear		5000F LV CLEAR	CA421 (F / M / S)		4 : 1	16~18sec	1.5 Hours			30 minutes			40%
Other	Urethane Thinner (Dilluent)	Exemption solvent application product for response to VOC regulation	TH0600											
		Products for general urethane	TH0045											
	Lacquer Thinner (Cleaner)	Low cost thinner proudcts	TH0035											
	Degreaser	High quality (Dry-on-ground) products	Prime Cleaner											
		Generic products	ZY0950 (Auto Cleaner)											
		Static prevention products for PL such as CPO BUMPER	Antistatic Cleaner											
	Blending Thinner (Dilluent)	Products for center branding and clear painting	Smart Blending Thinner											
	Mottling Preventer	Additive for mottling-proof improvement in metallic colors	ZY0935			10% ↓ of Color paint								
	Anti-pinhole Agent	Additive for prevention of transparent pinholes in summer	ZY0940			1% ↓ of Clear coat								
	Softener	Additive for prevention of transparent cracks in winter	Urethane Softener			15% ↓ of Clear coat (Main Agent)								

* F : Fast dry, M : Medium Dry, S : Slow Dry

Premium

Putty


PRIME PUTTY


PRIME DISPENSER PUTTY


SMART PUTTY

Primer


WP1000-GREY

Surfacer


PRIME SURFACER


PRIME NONSANDING SURFACER


WS2000


PRIME2000

Color (Ready-Mixed)


PRIME COAT

Color (Mix & Match)


BAROMATCH


SUMIX

Clear Coat


7500 HS CLEAR


5200 HS CLEAR


7200 HS CLEAR


5300 HS CLEAR


Prime Plus CLEAR


5400 HS CLEAR

Thinner (Dilluent)


TH0600

Additves & Other Products


PRIME CLEANER

Smart

Putty


SUPER PLUS PUTTY


PC280 (TYPE1)-GREY


SPEED PUTTY

Primer


RP3000-S/C/GREY


EP3000-GREY


VP1100

Surfacer


UU2000


UU3000

Color (Ready-Mixed)


UT5901


UT5031


UT545

Clear Coat


9020 FC CLEAR


720 MS CLEAR


Multi-booster CLEAR


MULTIPLUS


UT5750-A-9000(LV)


SENSE LV CLEAR


SMART CLEAR


5000F LV CLEAR


5100 LV CLEAR

Thinner (Dilluent)


TH0045


TH0035


ORIGINAL LACQUER THINNER


SMART BLENDING THINNER

Additves & Other Products


ZY0950 (Degreaser)


ANTISTATIC CLEANER


URETHANE SOFTNER


ZY0935 (Mottling Preventer)


ZY0940 (Anti-pinhole Agent)

Color (Ready Mixed)

Product Information	Main Agent	Curing Agent	Thinner	Mixing Ratio
Single Liquid Type Urethane Base Coat	UT5901	N/A	TH0600 (F / M / S)	100 : 100%
Two Component Urethane Base Coat	Prime Coat	CA221 (F / M / S)		100 : 50 : 50%
	UT5031	UT5031-B (F / M / S)		100 : 33 : 35%
	UT545	CA101		100 : 10 : 50%

* F : Fast dry, M : Medium Dry, S : Slow Dry

Color (Mix & Match)

BAROMATCH System (Mixing System of Solvent born)

Main Agent	Curing Agent	Thinner	Mixing Ratio
KB10 + KM Tinter (Colorant)	N/A	TH0600 (F / M / S)	100 : 100%
KB10U + KM Tinter (Colorant)	CA221 (F / M / S)		100 : 50 : 30%
KB10N + KM Tinter (Colorant)			100 : 33 : 30%
KB10F + KM Tinter (Colorant)			100 : 25 : 40%
KB10Q(LV) + KM Tinter (Colorant)	CA101		100 : 10 : 30%

SUMIX System (Mixing System of Water born)

Main Agent	Curing Agent	Thinner	Mixing Ratio
K9001+ K Tinter (Colorant)	N/A	K040 (Water soluble thinner)	100 : 10~20%

* F : Fast dry, M : Medium Dry, S : Slow Dry

KCC AUTOFINISH

2 Refinish Work Process

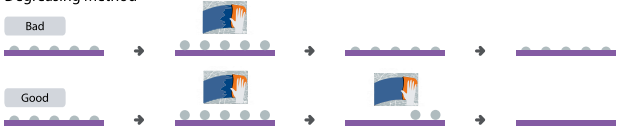
1 Car Wash

Wash and remove any residual contaminants (Dirt, dust, etc.) from the work area and use degreaser to remove any oil.

2 Removal of Previous Film

Wet the clean cloth with degreaser and wipe the work area.
And use clean dry cloth to remove any oil or contaminant floating on the surface before the degreaser dries.

Degreasing Method



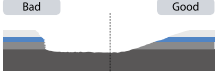
Information

You must first perform degreasing work in order to remove contaminants from the surface surrounding the sheet metal. Removing the previous film without degreasing would result in increased chance of painting defect (Cratering) occurrence during follow-up painting with contaminants from the surface infiltrating beneath the previous film.

The smudge remaining after grinding on the sheet metal and there is a huge difference between the raw steel plate and the previous border area in terms of surface level and therefore, single action sander along with P80 ~P120 sandpaper should be used to remove previous film from the damaged area.

3 Surface Leveling

Use double action sander and P80~P120 sandpaper to smooth the surface level difference around the border area of previous film on the damaged area.



ex) Surface leveling method

ex) Sander instructions

Use pressurized air on the area of surface leveling to eliminate dust and other contaminants from the area that will be applied with putty.

Wet the clean cloth with degreaser and wipe the work area.
And use clean dry cloth to remove any oil or contaminant floating on the surface before the degreaser dries.

4 Putty Work

1) Putty Application Process

Mixture Before mixing ➞ Stir the main agent sufficiently. Make sure to minimize mixing with air.
When mixing ➞ Adhere to the mixture ratio(100 : 1~3) for main agent and curing agent.

☞ Criteria : Exact mixture ratio (Use scale)
* Make sure that not too much air is mixed in while mixing.

Application Apply correctly according to location and status of damaged area.

☞ Caution : Putty curing agent is very sensitive to moisture within the air and its lid must be closed and stored in a cool, dark location after use.

Information

You must make sure that the putty does not directly come in contact with the previous film if possible when applying the putty on the previous film. The solvent property of the putty softens the previous film which in turn may cause wrinkles or putty smudges due to contraction of film in follow-up paintings.

2) Putty Application Work

① Putty Application Work 1

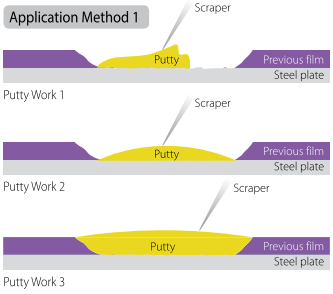
➡ Use your hand to confirm the difference in surface within the damaged area and apply thin layer from the center of damaged area.

② Putty Application Work 2

➡ Apply several times in thin layers until the damaged area is completly filled. Perform the primary putty sanding once drying is complete after application.

③ Putty Application Work 3

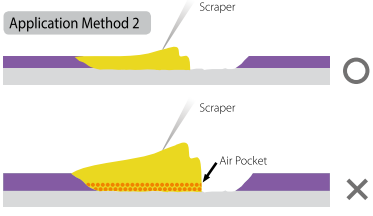
➡ Perform secondary putty sanding until you reach the previous film of damaged area after primary putty sanding is complete. Secondary putty sanding is for finishing the even surface and restoration to original state.



2-1) Putty Application Work

① Apply the putty several times in thin layers.

When the putty is applied in thick layer at once, bubbles are generated and this could create air pockets during sanding after drying. This would increase the consumption amount of lacquer putty and this could cause defects that occur after follow-up painting.



3) Application Method by Damaged Area

■ **Flat Surface**

Apply several times in thin layers from the most damaged area and finish with even surface level. The surface leveling at this time must be performed over a wide area.

■ **Curved Surface**

When the refinishing part of the panel is a curved surface, it is effective to finish with soft rubber paddle rather than with hard paddle. Do not let the apex become a flat surface.

■ **Extremely Curved Surface**

It is ideal to use a soft rubber paddle to apply the putty from bottom to top. Do not let the curved surface become a flat surface.

■ **Press Line Area**

It is ideal to shape the putty using masking tape.
Attach the tape along the press line and apply the putty on one side. After applying the putty, remove the tape immediately and attach the tape to the area where putty was applied, and then apply the putty on the other side.
Keep the center area of the putty even and finish.

Information

There is a bit of contraction during the drying process due to putty's nature and when performing follow-up painting and sanding with drying incomplete, there may be putty smudges due to contraction after drying is complete.

5 Sanding Process

- Sand the surface with thick layer of putty with P80 sandpaper.
- Make the edge of putty surface thin with P180 sandpaper. You must sand the edge of the surface from the grain of the surface applied with putty to the previous film.
- Use P320 sandpaper to finish and use hand block to sand minimal surface level differences. Do not press forcefully and sand lightly when finishing.

6 Wash Primer(VP1100) Painting (Main Agent : Curing Agent = 2 : 1)

- Paint the wash primer in order to prevent corrosion and to increase adhesiveness of steel plate surface.
  It is a two component primer which gives anti-corrosive capabilities and adhesiveness from etching effect for light metals, zinc plated panels, and regular steel plates and it is finished with 1 painting session.

7 Primer Surfacer Work

■ **Application Area**

Over raw steel plate | After putty application | Over lacquer film | Over Exchanging Parts

1) Charcteristics of Primer Surfacer

① Water resistance : Strong against moisture and prevents blisters.

② Adhesiveness between layers : Increases adhesiveness between previous film and finish coating.

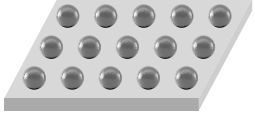
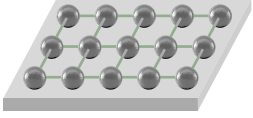
③ Prevention of absorption : Prevents absorption of finish coating base into primer surfacer.

④ Filling capability : Fills pinholes in putty surface and repairs defects.

⑤ High Levelling : Superior Levelling same as Top coat.

⑥ Color reproducibility : Black, white, and grey primer surfacers are applied to recreate the original color in a similar manner.

2) Difference between single and two component primer surfacers

Single Liquid Type Primer Surfacer		Two Component Primer Surfacer	
			
Advantage	Disadvantage	Advantage	Disadvantage
Drying Time	Adhesiveness Anti-corrision Flexibility Filling capapbility	Adhesiveness Anti-corrosion Shielding capability Filling capability Shockproof capability	Drying Time

3) Painting Method by Type of Primer Surfacer

	Spot / Panel Repairs	Overall Repairs (over 2- panels)	Remark
Single Liquid Type	○	×	Drying capability ↑, Substance property ↓ / Use for partial painting
Two Component	○	○	Drying capability ↓, Substance property ↑ / Use depending on number of panels and when primer coating is defective

4) Primer Surfacer Work Process

① Sanding

ⓐ When applying solvent-borne base

- Perform sanding in phases (P320 ~ P400) for partial painting
  You must eliminate deep sanding smudges and scratches that have occurred from putty sanding or surface leveling process.
- You must eliminate smudges and scratches without eliminating electrostatic coating with P600 ~ P1200 sandpaper for exchange components.
  If the raw steel plate is revealed, you must apply the wash primer.

ⓑ When applying water soluble base

- Perform sanding in phases (P600 ~ P1200) for partial / exchange component painting
  If the raw steel plate is revealed, you must apply the wash primer, and then reapply the primer surfacer.

② Masking

☞ Reverse Masking Method

- Mask to cover the surface that has been sanded within the area to be painted.
- Flip the masking paper inside out and stabilize with tape.

③ Degreasing (ZY0950, Prime Cleaner)

④ Primer Surfacer Mixture (For Prime Surfacer)

- Mixture Ratio – 100 : 25 : 20~30

⑤ Painting

- The spray gun used must be 1.3 ~ 1.4 mm and beware that there may be differences between spray gun control method and painting method depending on area being painted.

< Narrow Area >

Reduce the gun's pressure and the pattern width to paint over the putty and sanding smudges for the primary painting and paint over the entire area from the secondary painting, and adhere to the flash time for every session.

< Wide Area (Panel Painting) >

When painting the entire panel, add a bit more thinner than required for partial painting to secure surface leveling. Paint until the surface is wet.

⑥ Drying

<Air-Dry>

When drying is defective, the exterior and gloss are lacking after finish coating painting.

<Forced Drying (Heat Drying)>

Use infrared dryer or booth heat treatment for force drying.

⑦ Sanding

<When using solvent-borne base>
Attach P400 ~ P800 sandpaper for sanding.

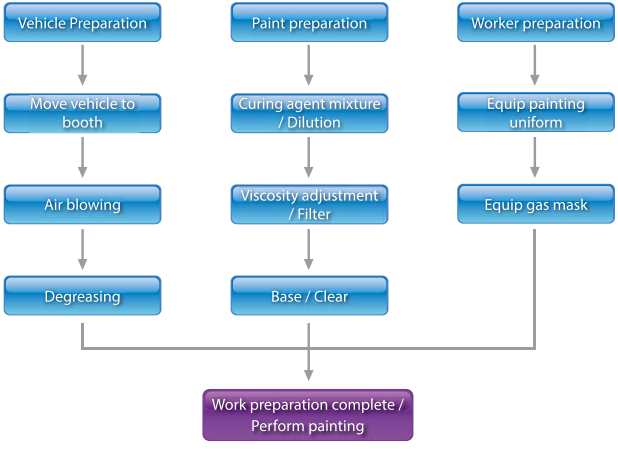
<When using water soluble base>
Attach P500 ~ P800 sandpaper for sanding.

⑧ Degreasing

- General degreasing is performed by using ZY0950 or Prime Cleaner.
- There may be dust due to static under dry weather or for plastic material so the use ofantistatic cleaner is recommended.

8 Finish Coating Painting

1) Finish Coating Painting Preparations



2) Vehicle Preparation

☞ Failure to completely eliminate contaminants through degreasing may cause cratering.

3) Paint Preparation

① Mix the correct curing agent according to resin type and mixture ratio and mix the thinner according to correct viscosity.

② Adhere to mixture ratio recommended by KCC and do not mix by eye measurement.

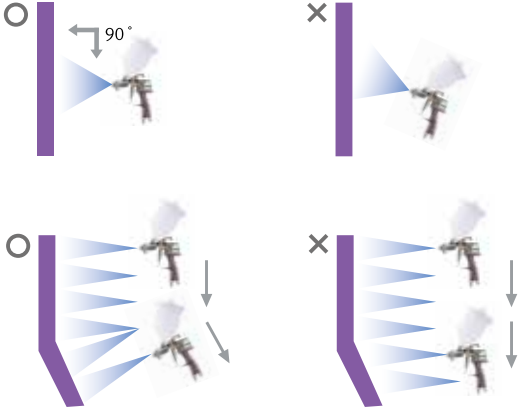
③ The thinner used should be selected between Standard/Quick dry/Dry-on-ground types depending on season, work site temperature, and booth temperature.

4) Finish Coating Painting (Base / Clear)

① Spray gun instructions (Solvent-borne base / Clear)

☞ Dry and wet painting can be controlled through spray distance, gun movement speed, spray gun discharge amount.

Distance	Angle	Speed
15~25cm	Right angle	30 ~ 60cm/s

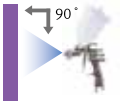
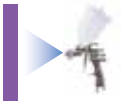
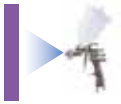
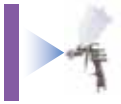


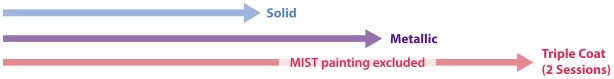
Auto Refinish Process

② Spray gun instructions (Water soluble base)

☞ Water soluble base painting should comply with the following recommended painting method.

Distance	Gun Type
10~25cm	HVLP-WSB

1 Sessions painting		2 Sessions painting		3 Sessions painting		Triple Coat Pearl painting	
							
WET Coat	Spray distance	WET Coat	Spray distance	MIST Coat	Spray distance	MID Coat	Spray distance
100%	10~15cm	80%	10~15cm	20~30%	20~25cm	50~60%	10~15cm



※ Solid & Triple coat painting

ⓐ 1 Session of WET painting (100%) / 1 Session of 3 coat base painting
- This painting is for concealment purposes and it is painted so that the base won't sag.
- Completely dry using air dry jet and remove dust with sandpaper of least P1000 grade.

ⓑ 2 Sessions of WET painting / 2 Sessions of triple coat base painting
- Paint the same as the first session.
- 1 Additional painting session when concealment is lacking.
- Perform triple coat pearl painting after drying of 2 WET painting sessions.

ⓒ Triple coat pearl painting
- Paint at about 50~60% compared to one session of WET painting.
- Perform 2 pearl painting sessions after completely drying of 1 session of triple coat pearl painting.

※ Metallic painting

ⓐ 1 Session of WET painting (100%)
- This painting is for concealment purposes and it is painted so that the base won't sag.
- Completely dry using air dry jet and remove dust with sandpaper of least P1000 grade.

ⓑ 2 Sessions of WET painting (80%)
- Paint at about 80% compared to one session of WET painting.
- About 60~70% is sufficient for finish coating colors with superior concealment capabilities.
- Perform 1 additional session of painting just like the secondary WET painting session for colors with lacking concealment capabilities.

ⓒ MIST painting (20~30%)
- Paint to prevent metallic mottlings and align the grain and paint slightly wet and not DRY.
- Spray distance : 20~25cm
  Drying – Maintain at least 40cm of distance from the painting surface when using air dry jet / Takes 3~10 minutes.

KCC AUTOFINISH

3 Color (Mixing system)

1) BAROMATCH System
2) SUMIX System

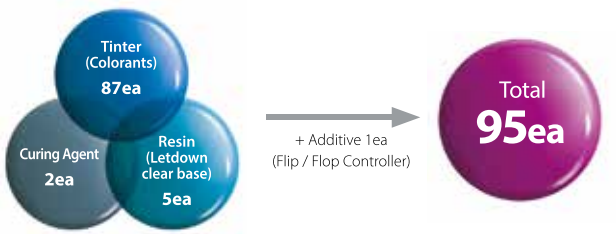
Overview

It is a high concentrated tinter (Colorant) type of mixing system and consits of 1K and 2K bases offering superior workability and color reproducibility.

Characteristics

1. 1K and 2K Bases → Both application of base and urethane type (Variety of options)
2. Effeciency of color positioning → High chroma
3. Possesses mixtures for all auto manufacturer brands around the world.
4. Superior exterior and workability, convenience of use for workers on site.

Product Composition



1 Resin (KB Series)

KB10	1K-Base coat (Solid, Metallic)	Single liquid type base + Clear paint
KB10U/N	2K-KB10U/N (Solid color)	2K Urethane Type (2:1 / 3:1) ⇨ Clear coat not applied)
KB10F/Q	2K-KB10F/Q (Solid color)	2K Urethane Type (4:1 / 10:1) ⇨ Clear coat not applied)

2 Tinter (Colorants) : 87ea

High Concentration Level (39 ea)							Low Concentration Level (6ea)
Red (15ea)	Violet (1ea)	Blue (6ea)	Green (2ea)	Yellow (10ea)	Orange (1ea)	White	
KM601	KM600	KM200	KM300	KM400	KM502	KM100	KM101
KM602		KM201	KM302	KM401		KM102	KM205
KM603		KM202		KM403		Black (2ea)	KM301
KM604		KM203		KM404			KM406
KM605		KM204		KM405		KM700	KM616
KM606		KM206		KM407		KM702	KM701
KM607				KM408			
KM608				KM409			
KM609				KM410			
KM610				KM412			
KM611							
KM612							
KM613							
KM614							
KM615							

2-1 Types and Characteristics of Solid Color Mixing agent

1) Transparent Mixing agent

Characteristics	High-Transparancy / Low-Hiding Power
Application	Metallic / Pearl colors
Mixing agent	KM102 / 400 / 403 / 407 / 603 / 609 / 612 / 613 / 614 / 615

2) Semi-transparent Mixing agent

Characteristics	Has characteristics of both Transparenct / Opaque
Application	Metallic / Pearl Colors, Solid Colors (Concealment may lack for widely used colors)
Mixing agent	KM200 / 201 / 202 / 203 / 204 / 206 / 300 / 302 / 401 / 408 / 501 / 601 / 608 / 700 / 702

3) Opaque Mixing agent

Characteristics	Low-Transparancy / High-Hiding Power
Application	Solid colors (Applied in small quantity for specific metallic colors)
Mixing agent	KM100 / 402 / 404 / 405 / 409 / 600 / 606 / 610 / 611

3 Metallic / Pearl

3-1 Types and Characteristics of Metallic Color Mixing agent

* Particle Size

KM807 > 816 > 806 > (804 = 814) > (805 = 803) > (802 = 800) > (801 = 810)

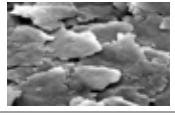
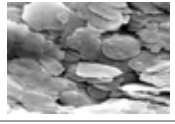
* Lightness of Hihglight- angle

KM816 > 807 > 806 > 814 > (804 = 805) > 803 > 802 > (800 = 810) > 801

* Lightness of Side- angle

KM810 > (801 = 800 = 802) > 803 > (804 = 805) > 814 > 806 > 816 > 807

1) Types and Characteristics of Metallic Particles

Types	Shape	Characteristics
Cornflake		• Ratio per area is low. • Particle count is high. • The particles are not as sparkly and relatively dark from the front and the side view compared to dollar type particles. • KM800, 801, 802, 803, 804, 805, 806, 807
Silver dollar		• Ratio per area is high. • Particle count is low. • The particles are bright from the front and the side view. • The particles sparkle quiet a lot from the front and the side view. • KM810, 814, 816

3-2 Types and Characteristics of Pearl Mixing agent

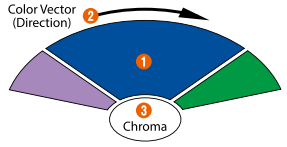
■ Classification by Color : White ~ Gold

■ Classification by Particle Size : Classification by particle size for each color. (Small / Medium / Large)

* Direction and characteristics of color by pearl particle – Refer to Tinter Characteristics.

4 Mixing Guide Instructions

4-1 Colored Mixing agent

Front	Side
	

1) High-Light angle (Front -view) Color Info

① Color Group
ex) Blue

② Color Vector (Direction)
ex) Blue with green (Greenish Blue)

③ Chroma
ex) High Croma
☞ White / Grey / Black -Circle : High / Medium / Low-Chroma

2) Side-angle (Side -view) Color Info

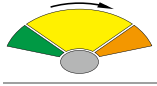
④ Side-Color Vector (Direction)
ex) You can see Reddish-Blue at side -view

⑤ Lightness of Side
ex) Dark
☞ White / Grey / Black -Circle : Light / Medium / Dark

Color Guide Instructions

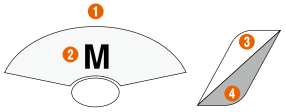
• Blue mixing agent featuring blue color with hint of green.
• Slightly low chroma.
• Exhibits hint of green from the side and a slightly dark mixing agent.

• Green mixing agent featuring green color with hint of blue.
• High chroma.
• Exhibits hint of blue from the side and slightly dark.



• Mixing agent featuring yellow color with hint of orange.
• Slightly low chroma.
(There is no information regarding the side view which makes it a coloring pigment and use of metallic colors is restricted)

4-2 Metallic / Pearl Mixing agent

Metallic	Pearl
	

1) High-Light angle (Front -view) Color Info

① Color Group
ex) Metallic → Grey / Pearl → Indicate by color (Green pearl, Red Pearl, etc)

② Particle Size
ex) S(Small) / M(Medium) / L(Large)

2) Side-angle (Side -view) Color Info

③ Side-Color
ex) Metallic-No Color / Pearl-Indicate color at the side of the pearl
(You can see Green at side -view)

④ Lightness of Side
ex) Dark
☞ White / Grey / Black -Circle : Light / Medium / Dark

Color Guide Instructions

	• Small size metallic particles and bright from the side.
	• Medium size metallic particles and dark from the side.
	• Large size metallic particles and dark from the side.
	• Medium size violet pearl particles with hint of gree.
	• Small size blue pearl particles with hint of blue from the side and dark.
	• Large size red pearl particles with hint of red from the side and dark.

WHITE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (Black) KM700 : KM1XX 1:9	Mixed Color (Silver) KM804 : KM1XX 9:1	White Color Group	Characteristics of Mixing agent
1	KM100				Standard white	• Pure white color and used often as mixing agent for solid colors • Use on metallic colors not recommended. → Use in small quantity recommended, metallic gradient and hue are lost as amount used increases
2	KM101				Low concentration level	• Brightness from the side improves if used on metallic color • There is risk of losing luster if excessive amount is used so use within 5% is recommended • Low concentration level mixing agent of KM100
3	KM102				For side adjustment	• Can be used for adjusting tone from the side for metallic colors. → Has the effect of darkening from the front and brightening from the side. • It is a mixing agent with darker shade of yellow from the front and blue from the side compared to KM101 and it is applied when the color appears to be murky from the side

BLACK Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM7XX 3:1	Mixed Color (Silver) KM804 : KM7XX 9:1	Black Color Group	Characteristics of Mixing agent
1	KM700				Standard black	• Basic black color • Has the effect of making the color murky from the side compared to the front when mixing with black pearl
2	KM701				Low concentration level	• It is a low concentration level black mixing agent and it is used for mixing bright colors or when black color is used in small quantity • Low concentration level mixing agent of KM700
3	KM702				Hint of yellow	• Color with hint of yellow from the front • It is the color with the highest black chromaticity and it is mostly used for mixing black color groups • It makes the color look darker from the side rather than the front when mixed with metallic color

BLUE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM2XX 3:1	Mixed Color (Silver) KM804 : KM2XX 9:1	Blue Color Group	Characteristics of Mixing agent
1	KM200				Hint of red	• Color with hint of red from both the front and the side
2	KM206				-	• Color with hint of red from the front and hint of green from the side • Color with stronger color tone from both the front and the side compared to KM203
3	KM203				-	• Color with hint of red from the front and hint of green from the side • Color with the same color vector as KM206 but with weaker color tone from both the front and the side
4	KM202				Hint of green	• Color with hint of green from both the front and the side
5	KM204				-	• Color with hint of green from the front and hint of red from the side • Color with hint of red rom the side compared to KM201
6	KM201				-	• Color with hint of green from the front and hint of red from the side • Color with same color vector as KM204 but with hint of bluegreen from the front
7	KM205				Low concentration level	• Same color as KM204 and a low concentration level mixing agent • Used mostly for mixing bright solid colors.

GREEN Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM3XX 3 : 1	Mixed Color (Silver) KM804 : KM3XX 9 : 1	Green Color Group	Characteristics of Mixing agent
1	KM300				Hint of greenish blue	• Color with hint of blue from both the front and the side
2	KM302				Hint of greenish yellow	• Color with hint of yellow from both the front and the side
3	KM301				Low concentration level	• Same color as KM300 and a low concentration level mixing agent • Used mostly for mixing bright solid colors

YELLOW Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM4XX 3 : 1	Mixed Color (Silver) KM804 : KM4XX 9 : 1	Yellow Color Group	Characteristics of Mixing agent
1	KM400				Hint of green	• Brightness from the side becomes darker • Color with same color vector as KM401 but with hint of green from both the front and the side
2	KM410					• Brightness from the side becomes darker • More hint of yellow from the front compared to KM400 and more hint of green from the front compared to KM401
3	KM401					• Color with hint of yellow from both the front and the side and improves brightness from the side
4	KM408					• Color with hint of green from both the front and the side • Brightness from the side improves compared to KM400 when mixed with metallic color
5	KM409					• Exhibits similar color tone compared to KM401 but use on metallic color is not recommended • Use on metallic color is not recommended
6	KM412				Hint of red	• Mixing agent for solid colors • Use on metallic color is not recommended but use only small amount if used • Color with less hint of red compared to KM404
7	KM404					• Mixing agent with more hint of red used on solid colors • Use on metallic color is not recommended but use only small amount if used • Color with same color vector as KM402 but with more hint of red
8	KM403					• Mixing agent for metallic colors • More hint of yellow and green from the side compared to KM407 when mixed with metallic color
9	KM407					• Mixing agent for metallic colors • Less hint of green from the side and more hint of red compared to KM403 when mixed with metallic color • Exhibits light apricot color when mixed with white color
10	KM405				Hint of yellow	• Solid color mixing agent of yellow color in general • Has the effect of making the color appear murky from the side when toned with metallic color
11	KM406				Low concentration level	• Same color as KM405 and a low concentration level mixing agent • Mostly used for mixing bright solid colors

ORANGE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM502 3 : 1	Mixed Color (Silver) KM804 : KM502 9 : 1	Orange Color Group	Characteristics of Mixing agent
1	KM502				Orange color	• Bright orange color • Red color vector from the front and greater hint of yellow from the side

RED Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) KM100 : KM6XX 3 : 1	Mixed Color (Silver) KM804 : KM6XX 9 : 1	Red Color Group	Characteristics of Mixing agent
1	KM609				Red yellow	• Exhibits gold color when mixed with metallic color. • Shows hint of yellow from both the front and the side.
2	KM606					• Mostly used for mixing solid colors. • Color belongs to darker red yellow but brighter compared to KM611 • Use on metallic color is not recommended but use only small amount if used
3	KM611					• It is dark red yellow. • Mostly used for mixing solid colors. • Use on metallic color is not recommended but use only small amount if used
4	KM610					• It is dark red yellow.
5	KM602					• It is a color with superior concealment amongst red colors. • Brighter and more hint of yellow compared to KM601
6	KM607					• Greater hint of yellow compared to red color mixing agent when mixed with metallic color. • Exhibits apricot color when mixed with white color.
7	KM615				Red	• It is a mixing agent that is the closest to red brown among red color mixing agents. • It expresses weaker hint of red when mixed with metallic color.
8	KM613					• It is a color with higher chroma and brightest from the side among red colors. • It is a color with weak concealment capabilities and exhibits more hint of yellow compared to KM614
9	KM601					• It is the mixing agent with the most hint of red. • It is a color with superior concealment among red colors. • It is darker and exhibits more hint of yellow compared to KM614
10	KM614					• It is a color similar to KM601 • The front becomes brighter and the side exhibits less of a hint of yellow compared to KM601
11	KM608					• It is a color with superior concealment among red colors. • The side becomes darker when mixed with metallic color.
12	KM603				Magneta	• The color is brighter and exhibits more hint of red • The brightness from the side becomes slightly darker.
13	KM612					• It exhibits more hint of pink compared to KM604. • The brightness from the side becomes slightly darker.
14	KM604					• It is the brightest color among the magneta color group within red color group. • There is slight hint of purple. • It is used to maintain the brightness from the side when magneta color group mixing agent was used.
15	KM605					• It is the darkest color among magneta color group within red color group. • It exhibits hint of purple when mixed with white and metallic colors • The brightness from the side becomes slightly darker. • It is a color with more hint of blue compared to KM603
16	KM600				Purple	• It is a red color with great hint of purple • It is a color with hint of blue from the front • It exhibits greater hint of red from the front rather than the side when mixed with metallic color
17	KM616				Low concentration level	• Low concentration level red mixing agent mostly used for mixing bright colors • Low concentration level mixing agent of KM608

SILVER Mixing agent

No	Mixing agent	Primary Color	Mixed Color (Blue) KM204 : KM8XX 9 : 1	Mixed Color (Black) KM702 : KM8XX 9 : 1	Silver Size	Characteristics of Mixing agent
1	KM800				Small	• Metallic color with the smallest particles
2	KM801					• Metallic color with small particles
3	KM802					• Metallic color with small particles • Metallic color with the biggest particles amongst metallic colors with small particles → The smaller particle in comparison is darker from the front and brighter from the side
4	KM810					• Metallic color with small particles • Metallic color that is the brightest from the front among metallic colors with small particles • Color that features particles sparkling from the side among metallic colors with small particles
5	KM803				Medium	• Metallic color with medium size particles • Metallic color that is the brightest from the side among metallic colors with medium particles
6	KM804					• Metallic color with medium size particles • Metallic color that is used the most among metallic colors with medium particles
7	KM805					• Metallic color with medium size particles
8	KM814					• Metallic color with medium size particles • Color that features particles sparkling from the side among metallic colors with medium particles • Metallic color that is the brightest from the front among metallic colors with medium particles
9	KM806				Large	• Metallic color with large size particles
10	KM807					• Metallic color with the largest particles • Metallic color that is the most sparkling from the front among metallic colors with large particles
11	KM816					• Metallic color with large size particles • Metallic color that is the brightest from the front among metallic colors • Color that features particles sparkling from the side among metallic colors with large particles
12	KM808				Medium	• Metallic color with medium size particles • Metallic gold color
13	KM809					• Metallic color with medium size particles • Metallic blue color

PEARL Mixing agent

No	Mixing agent	Color	White Base	Black Base	Pearl Size	Characteristics of Mixing agent
1	KM908	White Pearl			Small	• Pearl with the smallest particles among white pearls • Dark from the front and brightest from the side
2	KM909					• Pearl with small particles among white pearls • Dark from the front and bright from the side
3	KM906				Medium	• Pearl with medium particles among white pearls • Brightest from the front and dark from the side

* Pearl mixing agent painted by itself cannot conceal.
The color image above expresses the color that is shown for white/black surface when the painted surface has been painted with just the pearl mixing agent.

PEARL Mixing agent

No	Mixing agent	Color	White Base	Black Base	Pearl Size	Characteristics of Mixing agent
4	KM907	White Pearl			Medium	• Pearl with medium particles among white pearls • Bright from the front and darkest from the side
5	KM910				Large	• Pearl that affects the view from the front the most (Brightest from the front) • White pearl with large particles and the particles sparkle from the front • The effect is greater when light is dimmer (It is difficult to expect great effect when applied on bright silver)
6	KM919	Blue Pearl			Small	• Pearl that gives hint of blue overall (Tinting pearl) • Pearl with small particles among blue pearls
7	KM917					• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Pearl with small particles among blue pearls
8	KM918				Medium	• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Similar to KM917 in terms of characteristics but a pearl with medium particles among blue pearls
9	KM927				Large	• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Blue pearl with large particles and particles sparkle from the front
10	KM920	Green Pearl			Medium	• The side is darker and exhibits greater hint of greenish blue compared to KM921 • Pearl with medium particles among green pearls • Pearl that gives hint of green overall (Tinting pearl)
11	KM921					• Pearl that gives hint of green overall (Tinting pearl) • Pearl with medium particles among green pearls
12	KM902				Large	• Pearl that gives hint of green overall (Tinting pearl) • Pearl with large particles among green pearls • Pearl with hint of green yellow compared to KM920 and KM921
13	KM900				Medium	• Pearl that affects the view from the front significantly (Great hint of green from the front) • Similar to KM901 in terms of characteristics but a pearl with medium particles among green pearls
14	KM901				Large	• Pearl that affects the view from the front significantly (Great hint of green from the front) • Pearl with large particles among green pearls
15	KM929					• Pearl that affects the view from the front significantly • Green pearl with large particles and particles sparkle from the front • Color appears differently depending on angle of observation
16	KM925					• Pearl that affects the view from the front significantly (Great hint of green from the front) • Green pearl with large particles and particles sparkle from the front • The effect is greater when light is dimmer(It is difficult to expect great effect when applied on bright silver)
17	KM922	Gold Pearl			Medium	• Pearl that affects the view from the front significantly (Great hint of gold from the front) • Pearl with medium particles among gold pearls
18	KM928				Large	• Pearl that affects the view from the front significantly (Great hint of gold from the front) • Gold pearl with large particles and particles sparkle from the front
19	KM926	Orange Pearl			Large	• Orange pearl with large particles and particles sparkle from the front • Pearl that gives hint of red yellow overall (Tinting pearl)
20	KM913				Medium	• Pearl with medium particles among orange pearls • Pearl that gives hint of red yellow overall (Tinting pearl)
21	KM915				Small	• Pearl with small particles among orange pearls • Pearl that gives hint of red yellow overall (Tinting pearl)
22	KM911	Red Pearl			Medium	• Pearl with medium particles among red pearls • Hint of green when painted over black color background

* Pearl mixing agent painted by itself cannot conceal.
The color image above expresses the color that is shown for white/black surface when the painted surface has been painted with just the pearl mixing agent.

PEARL Mixing agent

No	Mixing agent	Color	White Base	Black Base	Pearl Size	Characteristics of Mixing agent
23	KM914	Red Pearl			Medium	• Pearl that gives hint of red overall (Tinting pearl) • Pearl with medium particles among red pearls
24	KM916				Small	• Pearl that gives hint of red overall (Tinting pearl) • Pearl with small particles among red pearls
25	KM924				Large	• Pearl that gives hint of red overall (Tinting pearl) • Red pearl with large particles and particles sparkle from the front
26	KM903				Medium	• Pearl with medium particles among red pearls • Pearl that affects the view from the front significantly (Great hint of red from the front)
27	KM904	Violet Pearl			Small	• Pearl that affects the view from the front significantly (Great hint of purple from the front) • Pearl with small particles among violet pearls • The effect is greater when light is dimmer (It is difficult to expect great effect when applied on bright silver)
28	KM905	Violet Pearl			Medium	• Pearl that affects the view from the front significantly (Great hint of purple from the front) • Similar to KM904 in terms of characteristics but a pearl with medium particles among violet pearls • The effect is greater when light is dimmer (It is difficult to expect great effect when applied on bright silver)
29	KM923	Redish Brown Pearl			Medium	• Pearl that is dark overall with slight hint of red • Pearl with medium particles

* Pearl mixing agent painted by itself cannot conceal.
The color image above expresses the color that is shown for white/black surface when the painted surface has been painted with just the pearl mixing agent.

Information for Product Use

	Main Agent	Curing Agent	Thinner	Main Agent	Curing Agent	Thinner
Mixture Ratio	KB10			100		100
	KB10U	CA221		100	50	30
	KB10N	CA221	TH0600	100	33	30
	KB10F	CA221		100	25	40
	KB10Q LV	CA101	(Common)	100	10	30

Temperature Conditions	CA221 (F) CA221 (M) CA221 (S)	5 ~ 15℃ 15 ~ 25℃ 25 ~ 35℃
Pot Life (20℃)	KB10U KB10N/F KB10QLV	3 Hours 2 Hours 4 Hours
Spray Viscosity	14 ~ 18sec (Ford Cup #4, 20℃)	
Spray Gun	Gravity Type	1.3 ~ 1.6mm
Spray Pressure	Air Pressure	1.8 ~ 2.0 bar (Discharge Amount : 2 Revolutions)
Number of Painting Sessions	3 Sessions for metallic colors 2 Sessions for solid colors ※ 1 Additional session if necessary	
Flash Time	At 25℃	2 ~ 5 after 1 session (Flash Time) At least 10 minutes after complete painting (Setting Time)
Film Thickness	1K Base → KB10	15 ~ 20㎛ (Metallic) 15 ~ 25㎛ (Solid)
	2K Base → KB10U / KB10N / KB10F / KB10QLV	38 ~ 43㎛

Information for Product Use

Film Sanding		Remove dust from 1K base coat After sanding with P1000 sandpaper or higher Follow-up painting → Clear painting
Paint Drying	KB10 - Air-Dry (25℃)	Dust Free - 10min
	KB10U/N - Air-Dry (25℃)	Dust Free - 25min To Handle - 10Hr Complete Drying - 7days
	Force Dry	60℃ x 25~30min
	KB10F - Air-Dry (25℃)	Dust Free - 12min To Handle - 8Hr Complete Drying - 5days
	Force Dry	60℃ x 20min
	KB10QLV - Air-Dry (25℃)	Dust Free - 12min To Handle - 6Hr Complete Drying - 3days
	Force Dry	60℃ x 20min
Film Degreasing	Remove Dust with Tack-rag(cloth) before painting	
Remark	Re-painting Interval	60℃×30 Minutes 2~3 Hours after drying (Time required to prevent wrinkles)

Overview

It is the first water soluble work site mixing system in Korea with appropriate workability for work site environment featuring superior color reproducibility developed with eco-friendly products using water as the main solvent.

Characteristics

1. Superior quality / Convenient workability / Reduction of raw ingredients and improved productivity.
2. First water soluble paint using 100% pure water in Korea / Superior work speed.
3. High Concentration Level / Excellent -wokability of Blending- painting.
4. Reduction of consumption / Fewer smudges. (Superior compared to solvent-borne paints)

1 Resin

K9001 → 1K-Base coat (Solid, Metallic) → Single component ColorBase + Clear coat

2 Mixing agent (Colored)

High Concentration Level (33 ea)							Low Concentration Level (6ea)
Red (12ea)	Violet (1ea)	Blue (4ea)	Green (2ea)	Yellow (8ea)	Orange (1ea)	White	
K601 K603 K604 K605 K607 K608 K609 K610 K611 K612 K614 K615	K600	K200 K202 K203 K204	K300 K302	K400 K401 K402 K403 K404 K405 K407 K409	K500	K100 K102 **Black (3ea)** K700 K702 K703	K101 K205 K301 K406 K616 K701

3 Metallic / Pearl

3-1 Types and Characteristics of Metallic Color

* Particle Size

K807 > 806 > 814 > 805 > 803 > (802 = 800) > 804 > 801 > 810

* Lightness of Hihglight- angle

K806 > 807 > (803 = 802 = 805) > (804 = 800) > 814 > 801 > 810

* Lightness of Side- angle

K810 > 801 > 814 > 800 > 804 > 805 > (803 = 802) > 807 > 806

3-1 Pearl (21 Types Total)

- Classification by Color : White ~ Gold
- Classification by Particle Size : Particle size classifed for each color. (Small / Medium / Large)

* Color vector and characteristics for each pearl particle – Refer to mixing agent characteristics.

4 Other Products

4-1 K040 - Thinner (Dilluent)

- Spray viscosity control.
- Improvement of spray workability.
- Used by mixing 10~20 % with raw paint.

4-2 K050 – Gun Cleaner

- For washing gun used with water soluble paint.
- Use when washing spray gun and other water soluble paint equipment.
- Do not mix with silicone substance.
- Do not mix with thinner.

4-3 K060 - Flip/Flop Control agent

- Enlarges the particles overall.
- Brightness from the side improves as the color from the front view becomes darker.
- Decrease in gloss when used excessively.

4-4 K070 – Water Soluble Degreaser

- Removal of residual debris from solvent-borne degreaser (Sodium, etc.)
- Use with solvent-borne degreaser.

4-5 K090 -Binder for Blending

- Painting Before Blending (SUMIX).

5 Painting Conditions

5-1 Standard Painting Method

Category	Painting Conditions
Environmental Conditions	Humidity 30 ~ 60%
Dilution Ratio	10 ~ 20%
Solid	WET - WET (1 Additional WET painting if necessary)
Metallic	WET - WET - MIST (1 Additional painting session by painting in WET thickness 2 times if necessary)
Triple Coat Pearl	2 Background painting sessions (Same as solid) - MID(Pearl) - MID(Pearl)

- Standard Painting : It is an intermediate painting method with stable alignment of metallic particles.
- WET Painting : WET painting is a painting method that increases color tone, chroma, and darkness.
- MIST Painting : MIST painting is a painting method that increases gradient and brightness while decreasing chroma.

6 Drying Conditions (Based on 25℃ / Use of Air Jet)

Metallic	Humidity	
Number of Painting Sessions	30~60%	At least 70%
First (WET)	3 ~ 5 minutes	At least 8 minutes
Second (WET)	3 ~ 5 minutes	At least 8 minutes
Third (MIST)	1~3 minutes	At least 5 minutes

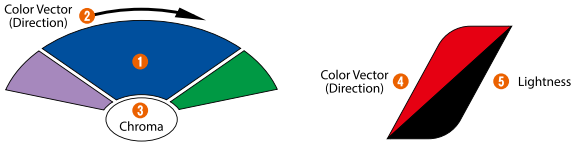
Solid & Triple Coat	Humidity	
Number of Painting Sessions	30~60%	At least 70%
First (WET)	4~6 minutes	At least 10 minutes
Second (WET)	4~6 minutes	At least 10 minutes
First Pearl Painting (MID)	2~5 minutes	At least 7 minutes
Second Pearl Painting (MID)	2~5 minutes	At least 7 minutes

- Control dryness through adjustment of dilution amount by humidity within painting environment.
- Increase surrounding temperature in high humidity to adjust humidity prior to working.

7 Mixing Guide Instructions

7-1 Colored Mixing agent

Front	Side



1) High-Light angle (Front -view) Color Info

① Color Group
ex) Blue

② Color Vector (Direction)
ex) Blue with green (Greenish Blue)

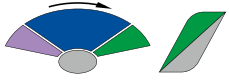
③ Chroma
ex) High Croma
☞ White / Grey / Black -Circle : High / Medium / Low-Chroma

2) Side-angle (Side -view) Color Info

④ Side-Color Vector (Direction)
ex) You can see Reddish-Blue at side -view

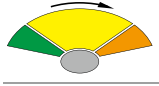
⑤ Lightness of Side
ex) Dark
☞ White / Grey / Black -Circle : Light / Medium / Dark

Color Guide Instructions



- Blue mixing agent featuring blue color with hint of green.
- Slightly low chroma.
- Exhibits hint of green from the side and a slightly dark mixing agent.

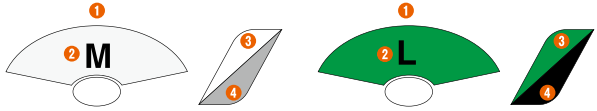
- Green mixing agent featuring green color with hint of blue.
- High chroma.
- Exhibits hint of blue from the side and slightly dark.



- Mixing agent featuring yellow color with hint of orange.
- Slightly low chroma.
  (There is no information regarding the side view which makes it a coloring pigment and use of metallic colors is restricted)

7-1 Metallic / Pearl Mixing agent

Metallic	Pearl



1) High-Light angle (Front -view) Color Info

① Color Group
ex) Metallic → Grey / Pearl → Indicate by color (Green pearl, Red Pearl, etc)

② Particle Size
ex) S(Small) / M(Medium) / L(Large)

2) Side-angle (Side -view) Color Info

③ Side-Color
ex) Metallic-No Color / Pearl-Indicate color at the side of the pearl
(You can see Green at side -view)

④ Lightness of Side
ex) Dark
☞ White / Grey / Black -Circle : Light / Medium / Dark

Color Guide Instructions

- Small size metallic particles and bright from the side.

- Medium size metallic particles and dark from the side.

- Large size metallic particles and dark from the side.

- Medium size violet pearl particles with hint of gree.

- Small size blue pearl particles with hint of blue from the side and dark.

- Large size red pearl particles with hint of red from the side and dark.

WHITE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (Black) K700 : K1XX 1 : 3	Mixed Color (Silver) K803 : K1XX 9 : 1	White Color Group	Characteristics of Mixing agent
1	K100				Standard white	• Pure white color and used often as mixing agent for solid colors • Use on metallic colors not recommended. → Use in small quantity recommended, metallic gradient and hue are lost as amount used increases
2	K101				Low concentration level	• Brightness from the side improves if used on metallic color • There is risk of losing luster if excessive amount is used so use within 5% is recommended • Low concentration level mixing agent of K100
3	K102				For side adjustment	• Can be used for adjusting tone from the side for metallic colors. → Has the effect of darkening from the front and brightening from the side. • It is a mixing agent with darker shade of yellow from the front and blue from the side compared to K101 and it is applied when the color appears to be murky from the side.

BLACK Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K7XX 3 : 1	Mixed Color (Silver) K803 : K7XX 9 : 1	Black Color Group	Characteristics of Mixing agent
1	K700				Standard black	• Basic black color • Has the effect of making the color murky from the side compared to the front when mixing with black pearl
2	K701				Low concentration level	• It is a low concentration level black mixing agent and it is used for mixing bright colors or when black color is used in small quantity • Low concentration level mixing agent of Black K700
3	K702				Hint of yellow	• Color with hint of yellow from the front • It is the color with the highest black chromaticity and it is mostly used for mixing black color groups • It makes the color look darker from the side rather than the front when mixed with metallic color
4	K703				Hint of blue	• Color with hint of blue among black color mixing agents

BLUE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K2XX 3 : 1	Mixed Color (Silver) K803 : K2XX 9 : 1	Blue Color Group	Characteristics of Mixing agent
1	K200				Hint of red	• Color with hint of red from both the front and the side
2	K202				Hint of green	• Color with hint of Green from both the front and the side
3	K203				–	• Color with hint of red from the front and hint of green from the side
4	K204				–	• Color with hint of green from the front and hint of red from the side
5	K205				Low concentration level	• Low concentration level mixing agent of Blue K204 • Mostly used for mixing bright solid colors.

GREEN Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K3XX 3 : 1	Mixed Color (Silver) K803 : K3XX 9 : 1	Green Color Group	Characteristics of Mixing agent
1	K300				Hint of greenish blue	• Color with hint of blue from both the front and the side
2	K302				Hint of greenish yellow	• Color with hint of yellow from both the front and the side
3	K301				Low concentration level	• Low concentration level mixing agent of Green K300 • Used mostly for mixing bright solid colors

YELLOW Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K4XX 3 : 1	Mixed Color (Silver) K803 : K4XX 9 : 1	Yellow Color Group	Characteristics of Mixing agent
1	K407				Hint of red	• Mixing agent for metallic colors • Less hint of green from the side and more hint of red compared to K403 when mixed with metallic color • Exhibits light apricot coor when mixed with white color
2	K403					• Used as mixing agent for metallic colors • More hint of yellow and green from the side compared to K407 when mixed with metallic color
3	K404					• Mixing agent with more hint of red used on solid colors • Use on metallic color is not recommended but use only small amount if used
4	K402					• Mixing agent for solid colors • Use on metallic color is not recommended but use only small amount if used
5	K401				Hint of green	• Color with hint of green from both the front and the side with improved brightness from the side improvin
6	K400					• Brightness from the side becomes darker • Color with same color vector as K401 but with hint of green from both the front and the side
7	K409					• Exhibits similar color tone compared to K401 and use as mixing agent for solid colors is possible • Use on metallic color is not recommended
8	K405				Hint of yellow	• Solid color mixing agent of yellow color in general • Has the effect of making the color appear murky from the side when toned with metallic color
9	K406				Low concentration level	• Low concentration level mixing agent of Yellow K405 • Mostly used for mixing bright solid colors

ORANGE Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K500 3 : 1	Mixed Color (Silver) K803 : K500 9 : 1	Orange Color Group	Characteristics of Mixing agent
1	K500				Orange color	• Bright orange color • Red color vector from the front and greater hint of yellow from the side

RED Mixing agent

No	Mixing agent	Primary Color	Mixed Color (White) K100 : K6XX 3 : 1	Mixed Color (Silver) K803 : K6XX 9 : 1	Red Color Group	Characteristics of Mixing agent
1	K600				Purple	• It is a red color with great hint of purple • It is a color with hint of blue from the front • It exhibits greater hint of red from the front rather than the side when mixed with metallic color
2	K605				Magenta	• It is the darkest color among magenta color group within red color group. • It exhibits hint of purple when mixed with white and metallic colors • The brightness from the side becomes slightly darker. • It is a color with more hint of blue compared to KM603
3	K603					• The color is brighter and exhibits more hint of red compared to KM605 • The brightness from the side becomes slightly darker.
4	K604					• It is the brightest color among the magenta color group within red color group. • There is slight hint of purple. • It is used to maintain the brightness from the side when magenta color group mixing agent was used
5	K612					• It exhibits more hint of pink compared to K604. • The brightness from the side becomes slightly darker.
6	K608				Red	• It is a color with superior concealment among red colors. • The side becomes darker when mixed with metallic color.
7	K601					• It is the mixing agent with the most hint of red. • It is a color with superior concealment among red colors. • It is darker and exhibits more hint of yellow compared to K614
8	K614					• It is a color similar to K601 • The front becomes brighter and the side exhibits less hint of yellow compared to K601
9	K615					• It is a mixing agent that is the closest to red brown among red color mixing agents. • It expresses weaker hint of red when mixed with metallic color.
10	K607				Red yellow	• Greater hint of yellow compared to red color mixing agent when mixed with metallic color. • Exhibits apricot color when mixed with white color.
11	K610					• It is dark red yellow.
12	K611					• It is dark red yellow. • Mostly used for mixing solid colors. • Use on metallic color is not recommended but use only small amount if used
13	K609					• Exhibits gold color when mixed with metallic color. • Shows hint of yellow from both the front and the side.
14	K616				Low concentration level	• Low concentration level red mixing agent mostly used for mixing bright colors • Low concentration level mixing agent of Red K608

SILVER Mixing agent

No	Mixing agent	Primary Color	Mixed Color (Blue) K204 : K8XX 9 : 1	Mixed Color (Black) K700 : K8XX 7 : 3	Silver Size	Characteristics of Mixing agent
1	K800				Small	• Metallic color with small particles • There are some particles that are smaller than that of K801 from the front and the side
2	K801					• Metallic color with the smallest particles • Darker from the front and brighter from the side compared to K800, K802 with small particles
3	K802					• Metallic color with small particles • Metallic color with the largest particles among metallic color with small particles → The smaller particle in comparison is darker from the front and brighter from the side

SILVER Mixing agent

No	Mixing agent	Primary Color	Mixed Color (Blue) K204 : K8XX 9 : 1	Mixed Color (Black) K700 : K8XX 7 : 3	Silver Size	Characteristics of Mixing agent
4	K803				Medium	• Metallic color with medium size particles • Color that features particles sparkling from the front among metallic colors
5	K804					• Metallic color that is the brightest from the side among metallic colors with medium particles • Metallic color with medium size particles
6	K805					• Metallic color with medium size particles • Brighter from the front and darker from the side compared to K804
7	K814					• Metallic color with medium size particles • Brighter from the side compared to K803 • Color that features particles sparkling from the front and the side among metallic colors with medium particles
8	K806				Large	• Metallic color with large size particles • Brighter from the front and darker from the side compared to K807 • Color that features particles sparkling from the front among metallic colors
9	K807					• Metallic color with large size particles • Particles are larger compared to K806 but darker from the front and brighter from the side • Metallic color that is the most sparkling from the front among metallic colors • Particle size is large but the color may get murkey and be used with caution

PEARL Mixing agent

No	Mixing agent	Color	Indepedent Pearl (White Base)	Indepedent Pearl (Black Base)	Pearl Size	Characteristics of Mixing agent
1	K900	White Pearl			Small	• Pearl with the smallest particles among white pearls • Slightly dark from the front and brightest from the side
2	K901					• Pearl with small particles among white pearls • Dark from the front and bright from the side
3	K902				Medium	• Pearl with medium particles among white pearls • Bright from the front and dark from the side
4	K903				Large	• Pearl that affects the view from the front the most (Brightest from the front) • White pearl with large particles and the particles sparkle from the front • The effect is greater when light is dimmer (It is difficult to expect great effect when applied on bright silver)
5	K904	Blue Pearl			Small	• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Pearl with small particles among blue pearls
6	K905				Medium	• Pearl that gives hint of blue overall (Tinting pearl) • Pearl with medium particles among blue pearls
7	K906					• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Similar to K904 in terms of characteristics but a pearl with medium particles among blue pearls
8	K918				Large	• Pearl that affects the view from the front significantly (Great hint of blue from the front) • Blue pearl with large particles and particles sparkle from the front • Similar to K904 in terms of characteristics but a pearl with large particles among blue pearls
9	K907	Violet Pearl			Medium	• Pearl that affects the view from the front significantly (Great hint of purple from the front) • Pearl with medium particles among violet pearls • The effect is greater when light is dimmer(It is difficult to expect great effect when applied on bright silver)
10	K908				Large	• Pearl that affects the view from the front significantly (Great hint of purple from the front) • Similar to K904 in terms of characteristics but a pearl with large particles among violet pearls and particles are sparkling from the front

* Pearl mixing agent painted by itself cannot conceal.
The color image above expresses the color that is shown for white/black surface when the painted surface has been painted with just the pearl mixing agent.

PEARL Mixing agent

No	Mixing agent	Color	Indepedent Pearl (White Base)	Indepedent Pearl (Black Base)	Pearl Size	Characteristics of Mixing agent
11	K909	Red Pearl			Small	• Pearl that gives hint of red overall (Tinting pearl) • Pearl with small particles among red pearls
12	K911				Medium	• Pearl that gives hint of red overall (Tinting pearl) • Pearl with medium particles among red pearls
13	K912				Large	• Pearl that gives hint of red overall (Tinting pearl) • Red pearl with large particles and particles sparkle from the front
14	K913	Green Pearl			Medium	• Pearl that affects the view from the front significantly (Great hint of green from the front) • Pearl with medium particles among green pearls • The effect is greater when light is dimmer(It is difficult to expect great effect when applied on bright silver)
15	K916					• Pearl that gives hint of green overall (Tinting pearl) • Pearl with medium particles among green pearls
16	K919				Large	• Pearl that affects the view from the front significantly (Great hint of green from the front) • Green pearl with large particles and particles sparkle from the front • The effect is greater when light is dimmer(It is difficult to expect great effect when applied on bright silver)
17	K921					• Pearl that affects the view from the front significantly • Green pearl with large particles and particles sparkle from the front • Color appears differently depending on angle of observation
18	K914	Gold Pearl			Medium	• Pearl that affects the view from the front significantly (Great hint of gold from the front) • Pearl with medium particles among gold pearls
19	K915				Large	• Pearl that gives hint of yellow overall (Tinting pearl) • Gold pearl with large particles and particles sparkle from the front
20	K917	Orange Pearl			Medium	• Pearl with medium particles among orange pearls • Pearl that gives hint of red yellow overall (Tinting pearl)
21	K920				Large	• Orange pearl with large particles and particles sparkle from the front • Pearl that gives hint of red yellow overall (Tinting pearl)

* Pearl mixing agent painted by itself cannot conceal.
The color image above expresses the color that is shown for white/black surface when the painted surface has been painted with just the pearl mixing agent.

Information for Product Use

	Main Agent	Thinner	Main Agent	Thinner
Mixture Ratio	K9001	K040	100	10~20%
Temperature Conditions (Standard Viscosity)	Refer to guide when looking up mixture			
Pot Life (20℃)	Resin + Mixing agent Resin + Mixing agent + Thinner		Within 15 days (Store in sealed can) Within 5 days (When sealing conditions are satisfactory)	
Spray Viscosity	27 ~33sec (Ford Cup #4, 20℃)			
Spray Gun	Gravity Type WSB			
Spray Pressure	Gravity Type HVLP / WSB		1.6 ~1.8 bar	
Number of Painting Sessions	2 ~ 3 Sessions		Solid - WET → WET Metallic - WET → WET → MIST	
Flash Time	At 25℃		2 ~ 5 after 1 session (Flash Time) → When using Air Jet	
Film Thickness	1K Base - K9001		15 ~20㎛	
Film Sanding			Remove dust from 1K base coat After sanding with P1000 sandpaper or higher Follow-up painting → Clear painting	
Paint Drying	K9001 – Air-Dry (25℃)		Set-to-touch drying – Within 10 minutes (When using air jet)	
Film Degreasing	Remove Dust with Tack- rag(cloth) before painting		Water soluble pine resin paper use is recommended	
Remark	Re-painting interval		After 60℃×10min drying, complete drying (Time required to prevent wrinkles)	

1 SUMIX Package Line Up (Product Info)

Category	Application	Main Agent	Curing Agent	Thinner	Purpose
Primer	Bumper (Plastic)	RP3000(S/C/GREY)	X		Adhesiveness
	Mixing Ratio	100			
	Bumper (Plastic)	WP1000-GREY (Water Soluble)		K040	Adhesiveness
	Mixing Ratio	100		10~20%	
	Panel	EP3000-GREY (Epoxy))	EP3000-B	TH0600	Adhesiveness, Anti-corrosion
	Mixing Ratio	6	1	2	
Putty	Panel	Smart Putty	928(T)C.A		Restoration, Filling
	Mixing Ratio	100	1~3		
Multi-purpose Putty	Panel	Prime Putty	CA2015(T)		Restoration, Filling
	Mixing Ratio	100	1~3		
Primer Surfacer	Panel, Putty	Prime Surfacer	CA221	TH0600	Shielding, Exterior
	Mixing Ratio	4	1	20~30%	
	Panel, Putty	Prime Non-sanding Surfacer	Non-sanding Curing Agent	TH0600	Shielding, Exterior
	Mixing Ratio	5	1	10~20%	
Water Soluble Sufacer	Panel, Putty	WS2000	X	K040	Shielding, Exterior
	Mixing Ratio	100		10~20%	
Clear	Base	7500 HS CLEAR	7500 HS-B	TH0600 (When necessary)	Exterior
	Mixing Ratio	2	1	Within 5%	
	Base	7200 HS	7200 HS-B	TH0600 (When necessary)	Exterior
	Mixing Ratio	2	1	Within 5%	
	Base	5200 HS CLEAR	CA520		Exterior
	Mixing Ratio	2	1		
	Base	5300 HS CLEAR	CA530		Exterior
	Mixing Ratio	3	1		
	Base	5400 HS CLEAR	CA540		Exterior
	Mixing Ratio	4	1		
Other	Panel	K070 (Water soluble degreaser)	X		Pre-treatment
	Panel	Antistatic Cleaner	X		Pre-treatment
	Panel	ZY095 (Auto Cleaner)	X		Pre-treatment
	Panel	Prime Cleaner	X		Pre-treatment

2 SUMIX System Painting Conditions

Category	Details
Mixing Ratio	• Water soluble base : K040(Thinner) = 100 : 10 ~ 20
Recommended Gun / Nozzle Size	• Gravity Type ➡ SATA JET B HVLP (Nozzle Radius : WSB) Walcom CARBONIO 360 HTE (Nozzle-size : 1.2)
Number of Painting Sessions	• Metallic water soluble base : WET - WET - MIST 3 Sessions • Solid water soluble base : WET - WET 2 Sessions ※ Additional painting session recommended for colors with low hiding power
SATA jet 3000 B HVLP (WSB)	• Pressure : 1.6±0.1bar / Discharge amount : 2 Revolutions
SATA jet 4000 B HVLP (WSB)	• Pressure : 1.6±0.1bar / Discharge amount : 2 Revolutions
SATA jet 5000 B HVLP (WSB)	• Pressure : 1.6±0.1bar / Discharge amount : 1¾ Revolutions
SATA jet 5000 B RP 1.2W	• Pressure : 1.6±0.1bar / Discharge amount : 1¾ Revolutions
Walcom CARBONIO 360 HTE(1.2)	• Water pressure : 1.6bar / Discharge amount : 2½ Revolutions • Pressure: 1.8bar / Discharge amount : 3 Revolutions

3 SUMIX System Painting Method

Solid (15 ~ 20㎛) : WET → WET

- **Intermediary drying :** Use air jet for each stage
- **Final drying :** Air jet or heat drying (60℃ × 5 minutes)

※ White color group
2 Painting sessions complete when applying prime non-sanding surfacer.
(Secures hiding power and reduces drying time)

Metallic (15 ~ 20㎛) : WET → WET → MIST

※ At WET 100% MIST 20 ~ 30%

- **Intermediary drying :** Use air jet for each stage
- **Final drying :** Use air jet

4 SUMIX System Work Process

Put on Vehicle

Step 1

Pre-treatment
Exfoliate previous film and degrease (Degreasing and sanding)

Step 2

Primer Coating
Degreasing, Putty, Drying, Sanding
(First : P120~P180 Finish P320)
(Second : P180~P220 Finish P400)

Step 3

Surfacer/Filler
Primer surfacer, Drying, Sanding
(At least P600. Attachment of sponge backup pad on curved/corner parts recommended)

Step 4

Mixing
Measure and mix designated quantity (Stir sufficiently prior to mixing)

Step 5

Finish Coating Base
Masking, Dust removal
(Removal of specks and dust, Attach sponge pad of minimum P1000 grade)

Step 6

Clear Finish Coating
Water soluble finish coating, clear solvent
(High solid type recommended)

Step 7

Heat Treatment
(Drying, Finish)

Release

Step	Process		Work Method
Step 1	Pre-treatment	Degreasing	Check damaged area and perform degreasing on working surface
		Remove Previous Film	Remove previous film on top of area being refinished
		Degreasing	Perform degreasing on exfoliated area
Step 2	Primer Coating	Degreasing	Degreasing on area being applied with putty
		Putty (First putty application)	Perform first putty application after checking damaged area (Filling)
		Sanding	Sanding on area of first putty application
		Degreasing	Degreasing on sanded area
		Putty (Second putty application)	Perform removal process for air pockets and such on area of first putty application
		Sanding	Sanding on area of second putty application
		Degreasing	Degreasing on sanded area
Step 3	Surfacer/ Filler	Paint primer surfacer	Paint primer surfacer wider than the area being applied with putty
		Drying	Perform forced heating according to product used
		Sanding	Primer surfacer sanding
		Degreasing	Degreasing on sanded area
Step 4	Mixing	Check color	Check vehicle color (Color code)
		Color Match (use CCM)	Use Colormatch with CCM
		Create sample / Check mixture	Check completed color mixture / Create sample
		Mix paint	Completed color mixture ➡ Mix paint
Step 5	Finish Coating (Base)	Degreasing	Degreasing prior to painting base
		Masking / Dust removal	Dust removal after masking if necessary
		Paint finish coating (Base)	Paint water soluble finish coating base (Follow standard work procedure)
		Drying	Sufficient drying (Checking for complete drying required)
Step 6	Finish Coating (Clear)	Dust removal	Dust removal for area painted with clear paint
		Paint finish coating (Clear)	Paint finish coating (Clear)
Step 7	Heat Treatment	Drying	Check drying conditions by product

1 Environment (Work Facility / Subsidiary Materials)

 Before Use	• Eliminate oil generating environment within color mixing chamber prior to use of water soluble apint. • Remove debris from floor (Filter) / wall within booth being used. (Minimize debris from booth air circulation) • Inspect booth air line → Check for oil and moisture • Separate use of spray gun for solvent-borne and water soluble paints required. • Use after removing residual paint from resin / mixing agent reader discharge (Maintain after ever use) • Check for oil for newly purchased air dry jet. • Eliminate risk of base contamination from used cutting oil and such for dry jet process.
 After use	• Check spray booth floor filter replacement cycle. (Minimize residual debris within filter after painting) • Wash spray gun immediately after painting. (Before film forms within gun / Use K050) • Washing after complete dismantling of spray gun every week recommended. (Complete removal of debris)

2 Storage

 Daily	• Indoor installation of water soluble paint mixing machine recommended → Can store small quantity of paint within the mixing machine. • Use of paint storing facility not recommended (Heating cabinet) → Storing at above 5℃ during winter required (5~35℃) • Store indoors with no direct sunlight and low humidity. • Store residual paint after painting (Resin+Mixing agent+Thinner) in sealed can (Except steel can). • Avoid direct sunight and use within 1~2 days recommended(Residual paint after painting).

3 Work

 Before Use	• Use after activating the mixing machine for 5~10 minutes. • Use of aluminum or plastic stick (Spatula) required (Do not use steel). • Immediate stirring after measuring of resin+mixing agent recommended. • Use of filter for water soluble paint recommended for paint mixing (125㎛). • Degreasing on previous film prior to base painting required (First application of solvent-borne degreaser → Second application of solvent-borne degreaser).

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4 Understanding Color

1) Color Theory
2) CCM

1 Perception of Color

1) Light is necessary to confirm an object.
2) Source of light : It generates light while also releasing heat.
3) Objects cannot be confirmed without light.
4) White reflects all colors.
5) Black absorbs all colors.

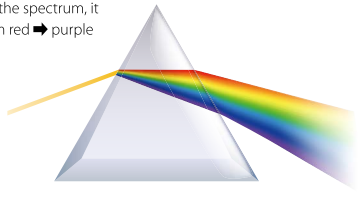
1-1 Elements of Light

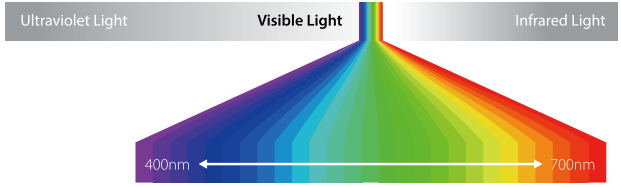
Color requires light, object, and human eye.

1-2 Confirmation of Color

The light possesses short/medium/long waves and colors are visualized depending on absorption, penetration, and reflection by each wavelength and film of vehicle expresses color in the same format.

When the light penetrates the spectrum, it exhibits 6 colors going from red ➡ purple depending on refraction.

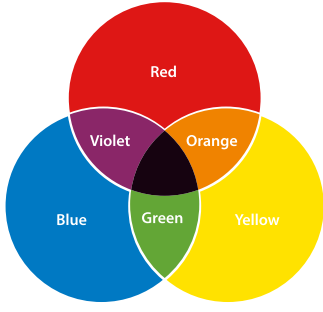




Colors can be perceived within the visible light among different waves of light.
Colors from red ➡ purple can be confirmed through reflection and absorption within 400 ~ 700nm waves.

2 Three primary colors

- Subtractive primary colors : These are RED, YELLOW, and BLUE and these colors cannot be created through mixing.
- Secondary colors : These are ORANGE, GREEN, VIOLET and these colors can be obtained through mixing the primary colors.

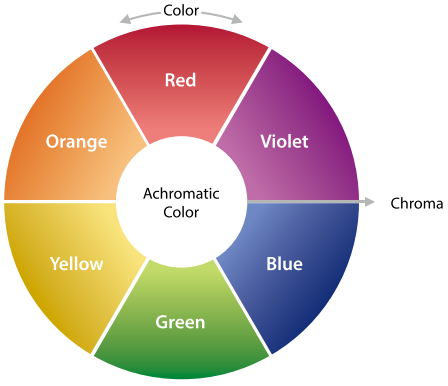


■ **3 Elements of Mixing**

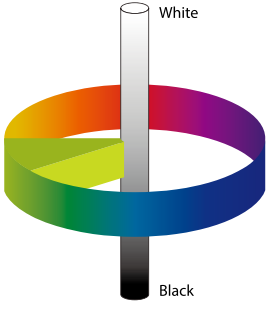
Brightness	Color	Chroma
Light and shade of colors	Color group (Vector)	Clarity and murkiness of colors

■ **Hue Circle (Color / Brightness / Chroma)**

• Circular movement around hue circle at center expresses higher chroma as it moves further from the center.



• Brightness(Light/Shade) is expressed from top to bottom.



2-1 Understanding Color

• All colors are affected by type of light.

• Correct type of light must be selected in order to identify colors. (Vehicle colors are identified based on sunlight from outside.)

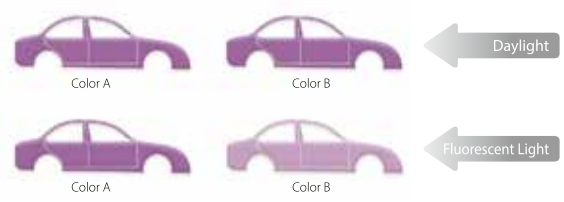
• You must start with mixing data that is as close to desired color when mixing.

• Achromatic colors (White/Black/Grey) cannot express chroma but only express brightness and they can be moved to all colors.

• You must check the color after glossing (Clear painting).

3 Metamerism

• When two colors appear to be the same color but appears to be different colors as the source of light changes.



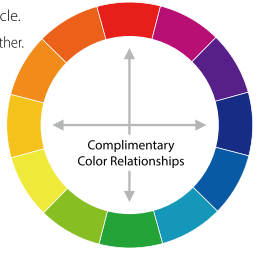
3-1 Complementary Colors

• They are located on the opposite side on the hue circle.

• They reduce the feel of respective color when mixed together.

• Chroma decreases when they are mixed together.

• They cause metamerism.



How to Prevent Metamerism

• Do not tone by mixing with eye measurement.

• Utilize the mixing data.

• Select appropriate source of light.

• Paint the surrounding environment in white or grey.

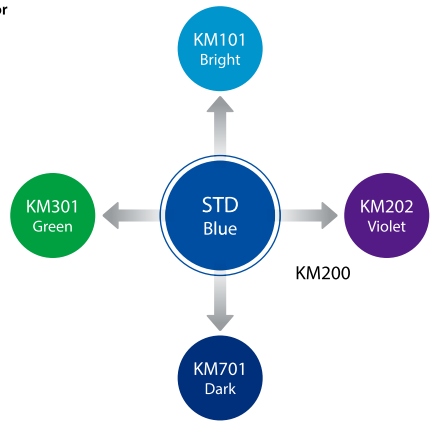
4 Color Tone Vector

■ **Basic Term for Mixing**

Color / Color Vector / Brightness / Chroma / Brightness From the Side (Metallic) / Color From the Side (Metallic)

ex) BLUE Color

KB10
KM200
KM202
KM301
KM701
KM101



4-1 Know the characteristics of mixing agents within background data.

4-2 List the mixing agents that move the color vectors by color groups.

ex) KM301 moves the color towards green as it is a green mixing agent.
KM200/KM202 moves the color towards violet as they are blue mixing agents.
KM101/KM701 are white and black and they control brightness.

4-3 Compare the mixing agents within the same group.

ex) KM301 (Towards green) - KM202 (Towards violet)
KM202 (Towards green) - KM200 (Towards violet)
→ Even the mixing agents within the same group may vary in color vector when being compared.

5 Change of Color According by Conditions

5-1 Difference in Color by Drying

- Color for paint changes depending on drying method.
- There are several types of mixing agents for each color and heavy pigments will settle to the bottom while drying, and relatively lighter pigments will float to the top of the film. (It is more accurate to check the dried film after painting rather than checking the color in liquid form.)

Film before drying

Film being dried　　Film after drying

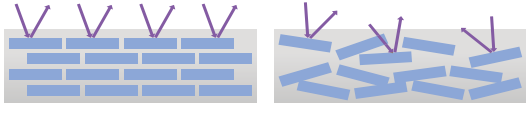
- Solid colors generally become darker / Metallic colors generally become lighter.
- Color becomes clearer as drying takes longer.

5-2 Change in Color by Clear Painting

- Clear painting on top of 1K base film enriches color and makes it look brighter.
- Color with more pigment appears to be more enriched.
- Color check in liquid form is difficult for metallic base and clear painting is required.

5-3 Change in Color by Painting Conditions

- Metallic paints differ in terms of aluminum particle alignment within the film depending on amount of thinner, air pressure, and other conditions and color appears to be different for each paint.
- Aluminum particles reflect light as it comes in contact with light and its brightness varies depending on amount of reflection.



Bright from the front / Dark from the side　　Dark from the front / Bright from the side

1 Understanding CCM

- Different program from the traditional simple mixture search system (CCS).
- Stores data on color characteristics by types of mixing agent and mixture ratio for BAROMATCH / SUMIX System.
- Computer program that automatically develops the suitable mixture for the user.
- Equipped with simulation function that can predict the change in color.

2 Advantages of CCM

1) Necessity

Added automated mixing function to CCS functions. (Mixing of color not in possession possible)

2) Cost Efficiency

Reduces number of repeated mixing / Reduces mixing hours / Stores and manages color matching results.

3) Productivity

Creates color mixtures / Utilizes custom color mixtures / Provides convenient and easy color matching.

4) Customer Satisfaction

Provides basic matching capability of certain quality regardless of mixing capability / Secures objectivity through providing quantified data.

3 Key Functions of CCM

Default CCM Window

Mode Selection

① **BAROMATCH** : Mixing with solvent-borne paint / **SUMIX** : Mixing with water soluble paint
② **M** : Use when mixing metallic and solid colors / **3C** : Use when mixing 3Coat Colors

Key Functions

① Can use after entering colormetric value after determining the color of the body.
② Enter desired total paint weight (g) ➞ Amount of paint necessary for mixing
③ Enter ratio of resin within paint (Weight ratio, %) ➞ This affects concealment.

⑨ Auto mixing function when mixing solid colors (➞ Process of producing new mixture).

⑤ Use the Spectrophotometer on the body to determine color and click Body Color button.
⑥ Mix new color ➞ Create sample ➞ Spectrophotometer value ➞ Move to CCM program
⑦ Click Read Spectrophotometer Data (Vehicle/Paint sample color information ➞ Move to CCM program)
⑧ Click Confirm button when color sample, graph, and values are displayed.

⑩ Body sample – Mixing mixture DE value (Color difference).
⑪ Auto and similar color mixture window within CCM.
⑫ Search and select similar colors stored in the program when mixing metallic colors.

Key Functions of CCM(Color Navi)

⑬ Check the actual input amount of new color mixture after creation.
(Re-enter mixture ➞ Enter mixture ➞ Confirm)

⑭ Progression of current color mixing in process. (Red ➞ Work number for current production)
⑮ Slight mixing function using DE value virtually without creating sample.

※ More detailed instructions can be obtained through visiting or camp training after installation of CCM program.

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5 Defect of Paint Film

1) Defect in Refinished Film
2) Things to Check in Water Soluble Paint

1 Causes for Defects in Film

Category	Film Thickness	Intermediate Drying	Curing Agent	Thinner	Degreasing	Painting Technique	Temperature & Humidity	Booth Environment	Air Line	Paint Storage	Sanding	Base Stage prior to previous film
Blister					●		●		●			
Crack	●		●									●
Speck, Dust					●			●				
Cratering					●			●	●			
Unsatisfactory Adhesion	●	●		●	●		●			●	●	●
Metallic Smudge	●	●		●		●	●			●		
Orange Peel	●	●		●		●						
Pinhole, Popping, Air Pocket	●	●		●			●					●
Unsatisfactory Drying	●	●	●	●			●	●				
Sagging	●	●		●		●	●					
Sanding Mark	●	●		●							●	●
Water Mark		●		●			●					
Acid Rain, Bird Dropping			●	●			●					
Color Smudging (Bleeding)			●	●						●		●
Loss of Luster	●	●				●	●			●		●

2 Types of Film Defects

2-1 Swelling (Blister)

▸ Known as blister or bubble.

▸ The state where paint layer swells up like an air pocket (Small / large) after a long period of time.

Causes

- Air line / Degreasing / Temperature, Humidity

Solution

- Check for contamination prior to painting.
- Reduce temperature difference in surrounding temperature and in base material.
- Sufficient drying in each process during painting.
- Removal of water from air hose.

Refinish

- Sand the area exhibiting swelling and exfoliate the base if necessary and re-paint.

2-2 Crack

▸ The state where an irregular line is displayed on the surface of the film.

Causes

- Film thickness / Curing agent / External shock

Solution

- Adherence to mixture ratio and sufficient drying.
- Sufficient drying time between painting sessions.
- Adherence to designated film thickness.
- Add softener when painting primer coating.

Refinish

- Exfoliate the cracked area and re-paint.

2-3 Cratering

▸ Occurrence of circular hole on the painted surface.

Causes

- Air line / Degreasing / Dust

Solution

- Inspect air line.
- Adherence to degreasing work procedure
- Paint in thin layer initially.

Refinish

- Sand the area of cratering and re-paint.

2-4 Unsatisfactory Adhesion

▸ Occurrence where the film is partially falling off due or exhibits lack of adhesiveness.

Causes

• Sanding / Degreasing / Re-painting cost / Thickness

Solution

• Degreasing (Remove releasing agent from bumper).
• Appropriate sanding by purpose.
• Compliance with recommended film thickness.

Refinish

• Sand wider than the defective area and re-paint.

2-5 Metallic Smudge

▸ Imbalance in aluminum particle alignment causing cluster of particles on one side creating a large spot.

Causes

• Spray technique / Temperature, Humidity / Drying / Thinner

Solution

• Improve painting mastery.
• Use thinner appropriate for given temperature with sufficient intermediate drying.
• Clear painting after drying base coat.
• Excessive painting prohibited.

Refinish

• Perform additional dry painting if smudge is not significant prior to clear painting.
• Sand up to the base layer after drying and re-paint.

2-6 Orange Peel

▸ Uneven painted surface exhibiting concave parts looking similar to orange peels.

Causes

• Thinner / Film thickness / Spray technique / Temperature

Solution

• Adherence to appropriate painting technique.
• Adherence to recommended thinner and intermediate drying instructions.
• Adjust temperature/gun pattern by work process.

Refinish

• Polishing after sanding the defective area.
• Re-painting in clear paint after sanding the clear film.

2-7 Pinhole, Popping, Air Pocket

▸ Small holes or air pockets present on the film surface when drying after painting.

Causes

• Intermediate drying / Thickness / Temperature and humidity / Primer coating

Solution

• Give sufficient time for intermediate drying and adhere to appropriate film thickness.
• Give sufficient standby time prior to complete drying.
• Use thinner appropriate by temperature
• Apply thin primer coating to minimize air pockets.

Refinish

• Repaint after complete removal of defective area.

2-8 Insufficient Drying

▸ Occurrence where handprint and watermarks are visible as the film fails to cure.

Causes

• Thickness / Curing agent / Intermediate drying / Thinner

Solution

• Adhere to intermediate drying and film thickness requirements.
• Check temperature within booth.
• Mix according to curing agent mixing ratio.
• Check temperature and humidity conditions for each recommended thinner.

Refinish

• Perform additional heat treatment.
• Repaint after removal if severe.

2-9 Sagging

▸ Film becoming partially thick and sagging or the film sagging.

Causes

• Intermediate drying / Thickness / Thinner / Spray technique

Solution

• Give sufficient time for intermediate drying.
• Control painting pressure and discharge amount.
• Check temperature for booth and surface .
• Use designated quantity of appropriate thinner.

Refinish

• Polishing or re-painting after complete removal of defective area after drying is complete.

2-10 Sanding Mark

▸ Visible line/mark along the direction of sanding.
(It may appear several weeks after painting is complete)

Causes

• Sanding / Sanding prior to drying / Film thickness

Solution

• Use recommended sandpaper for each process.
• Degreasing prior to sanding and removal of large debris through air blowing.
• Complete drying of surfacer/filler.
• Frequent replacement of sandpaper during sanding .

Refinish

• Re-paint after sanding improvement as recommended.

2-11 Watermark

▸ Spot as large as a water drop on the film and such area exhibiting loss of luster and dent.

Causes

• Intermediate drying / Temperature, Humidity / Curing agent

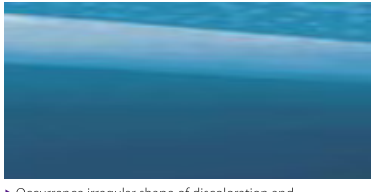
Solution

• Adherence to standard painting method and appropriate film thickness.
• Sufficient drying of film and restriction of long term storage with water drop and other debris on top of film.
• Carwash prohibited until complete drying of film after car has been newly purchased.

Refinish

• Polishing around the defective area.
• Sanding and re-painting if severe.

2-12 Acid Rain and Bird Dropping



▸ Occurrence irregular shape of discoloration and etching(Hole) on surface of film.

Causes

• Surrounding environment / Temperature / Insufficient drying

Solution

• Removal of chemical substances thorough regular carwash.

Refinish

• Use warm water, detergent, and recommended cleaner to remove chemical substances.

2-13 Bleeding

▸ Color of primer coating or base substance floating to to finish coating film.

Causes

• Thinner / Drying / Thickness / Previous film / Etc.

Solution

• When painting over film at risk of bleeding, shield the previous film with two component surfacer/filler or remove the film and re-paint.
• Paint finish coating only after complete drying of surfacer/filler.
• Do not use putty mixed with silver.
• Use designated thinner.

Refinish

• Re-paint after sanding the defective area. (Two component surfacer/filler recommended)

2-14 Loss of Luster

▸ Loss of luster after film dries or after some time.

Causes

• Previous film / Thickness / Intermediate drying / Thinner

Solution

• Adherence to standard painting procedure and film thickness.
• Clear painting after complete drying of intermediate and finish coatings .
• Use recommended thinner (Check temperature).
• Adherence to work time.
• Adherence to intermediate drying time.

Refinish

• Sanding and re-painting after complete drying.
• Polishing after sanding defective area .

1 Causes for Defects in Film

Category	Film Thickness	Intermediate Drying	Air Line	Curing Agent	Thinner	Degreasing	Technique	Temperature & Humidity	Booth Environment	Paint Storage	Sanding	Previous Film (Previous Stage)
Blister			●			●		●				
Crack	●			●								●
Speck, Dust						●			●			
Cratering			●			●			●			
Unsatisfactory Adhesion	●	●				●		●		●	●	●
Smudge	●	●			●		●	●		●		
Orange Peel	●	●		●	●		●	●				
Popping	●	●		●	●			●				
Pinhole												
Unsatisfactory Drying	●	●		●	●			●	●			
Sagging	●	●			●		●	●				
Sanding Mark	●	●			●						●	●
Water Mark		●			●			●				
Bleeding				●	●					●		●
Loss of Luster	●	●					●	●		●		●

2 Things to Check When Applying Water Soluble Paint

Unsatisfactory Adhesiveness

Occurrence	Causes	Solution	Check
Unsatisfactory Adhesion	• Excessive base painting (At least 30㎛ for solid colors) → Solid colors	• Thick film → Non-sanding surfacer for color lacking concealment	☐
	• When resin ratio is below 50% in the process of mixture design.	• Application of aleast 60% of resin ratio when making mixture on site is recommended.	☐
	• When degreasing has not been performed prior to applying base. (Space between films occur due to debris)	• Degreasing process prior to base application is required. → First application of solvent-borne degreaser → Second application of solvent-borne degreaser	☐
	• Clear painting when base is not dry.	• Clear paint application after confirming complete drying of base.	☐

Loss of Luster

Occurrence	Causes	Solution	Check
Loss of Luster	• When adding at least 15% K060 (Side tone conditioning agent) during mixture design	• Do not use excessive amount of K060. (Side tone conditioning agent)	☐
	• Clear painting without drying the base.	• Clear paint application after confirming complete drying of base.	☐

Cratering

Occurrence	Causes	Solution	Check
Cratering	• When degreasing has not been performed prior to application of base.	• Degreasing prior to base application required. → First application of solvent-borne degreaser (Oil removal) → Second application of solvent-borne degreaser	☐
	• Air line pollution (Oil and moisture generated within air line)	• Regular air line and air compressor inspections required.	☐
	• Contamination of used materials. (Spray gun, Air dry jet)	• Complete disassembly of air dry jet prior to use. → Use after wash (Inspect for oil) • Washing and maintenance of spray gun before and after use required. → Do not use mutually with solvent-borne and water soluble paints	☐
	• Glossing near the booth.	• Glossing performed away from the booth.	☐

2 Things to Check When Applying Water Soluble Paint

Blister (Swelling)

Occurrence	Causes	Solution	Check
Blister (Swelling)	• Thick base film application. (Residual moisture for water soluble base)	• Thick film prohibited (Paint at appropriate film thickness) → Apply surfacer(Black, white, grey) according to color of finish coating.	☐
	• Clear painting when base is not dry.	• Clear paint after confirming complete drying of base.	☐
	• Moisture generated due to temperature difference between surface temperature and booth temperature.	• Paint after maintaining appropriate temperature between the surface and the booth.	☐
	• Moisture generated in air line.	• Regular replacement of oil and moisture filter. • Remove moisture from air line.	☐
	• Wet sanding for putty and surfacer sanding.	• Wet sanding is prohibited.	☐

Rust

Occurrence	Causes	Solution	Check
Rust	• When replacing panel. → Steel surface exposed due to excessive sanding on underlying layer.	• Apply wash primer on part where the underlying steel surface is visible. → Work to minimize exposure of steel plate when sanding.	☐
	• When repairing panel. → Steel surface exposed due to excessive sanding of previous film when sanding primer coating and surfacer/filler.	• Work to minimize exposure of steel plate when sanding. • Intermediate application required.	☐