ENVIROBASE®
HIGH PERFORMANCE

Mazda 51K Rhodium White Repair

Waterborne Basecoat Repair Process

ETB011 Technical Bulletin
5-19-2025 Revision

Application Trials and Test Report:

Description of the Mazda 51K Rhodium White color:

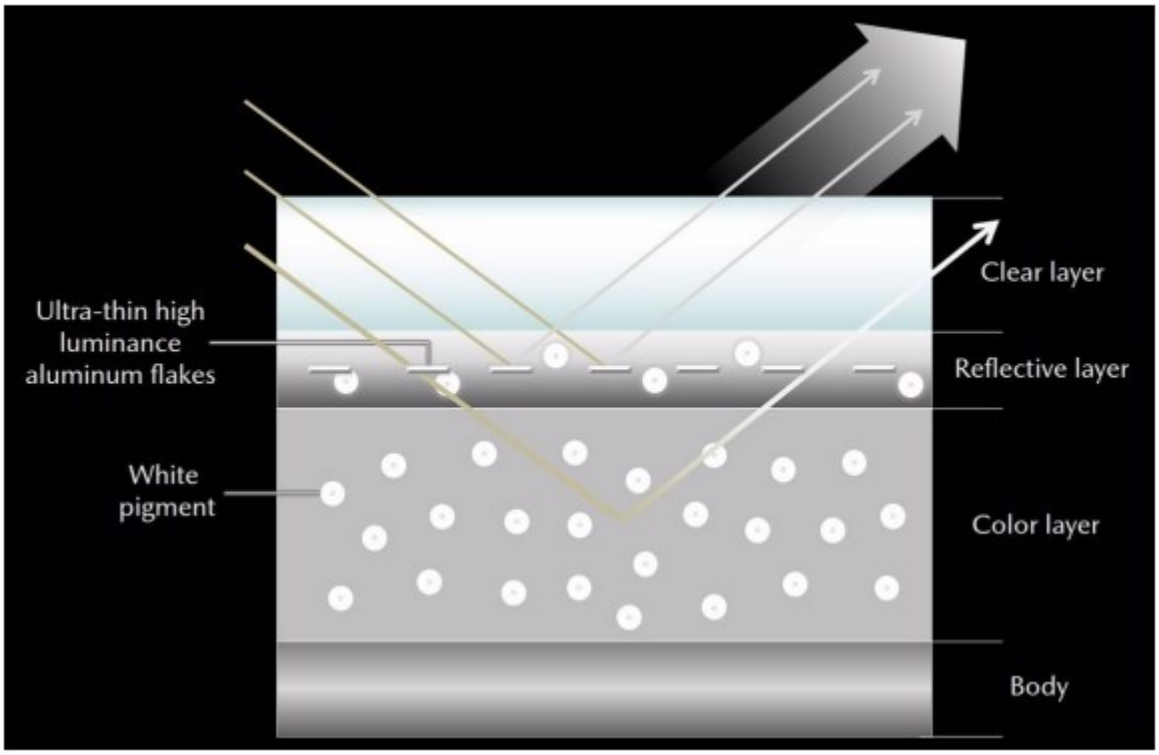
For Rhodium White, Mazda has taken the Takuminuri painting process, which has already produced the Soul Red Crystal and Machine Gray special colours, to a new level. This has made it possible to mass-produce an expressive colour consisting of three layers: a clear layer, a reflective layer and a colour layer.

The colour layer contains a newly developed white pigment that provides a silky, fine-grained white. As is usual with white paints, the primer tends to show through, while the clear coat is usually thicker than with other paints. However, thanks to the newly developed pigment, Rhodium White has reduced the thickness of the clear coat by up to 30 percent compared to Snowflake White. This also contributes to a more efficient use of resources and to the reduction of CO2 emissions in production.

The reflective layer contains wafer-thin and luminous aluminium flakes and is applied with great care. The aim was to achieve a uniform thickness whose volume shrinks considerably during the subsequent drying process. As a result, the reflective layer is only about 0.5 micrometres thick, which is only about seven percent of the thickness of a typical reflective layer. *(Source: Mazda press release 14 June 2022)*

MAZDA / 51K - Rhodium White *(Source: Mazda press release 14 June 2022)*

The Takuminuri Painting Process *(Source: Mazda press release 14 June 2022)*



Available paint system and color formula in Envirobase High Performance

For the reproducibility of the Mazda color 51K Rhodium White, Envirobase HP has created a color formulation based on a 3-layer application.
The base color is a solid white basecoat and the second layer (Lasur) containing T451 Extra Fine White Pearl and the T4705 Liquid Metal 2 Special pigment.

First application tests have shown that this formulation with T4705 in the second layer cannot be processed like a conventional 3-layer color such as Audi's LA09 Pearl white.

The greatest difficulty was the application of the second layer with T4705, which developed a strong blotchiness if the application was too wet.

In further trials we changed the spray gun equipment from HVLP technology to a Compliant Spray Gun. The nozzle width was reduced and the material flow was also reduced.

We have seen the result could be improved significantly, but that satisfactory market acceptance has not yet been achieved.

The following repost describes the results that have been achieved so far.

Envirobase Formula:

Formulation Report
Date:Monday, May 19, 2025

991108 : PRIME : ENVIROBASE HP EHP TRICOAT : 991108 : 2022 : -Body : RHODIUM WHITE : 51K : MAZDA : MMF
Brand Reference: 991108
Finish Effect: Mica
Category: Fade/Blend
Grams/Quart
Base for topcoat 991108/2
Use undercoat G1 for best results
WARNING: contains T4705 limited use toner. Please check available stock prior to mixing

Main Layer:991108/1
Price Code:A
SDS Number:EHP1
Revision Date:5/11/2022

Code	Description	Gms/Qt	CML.
T400	WHITE	1,073.10	1,073.10
T423	YELLOW	58.50	1,131.60
T404	BLACK	4.00	1,135.60
T440	RED	1.60	1,137.20
T415	BLUE	0.80	1,138.00

HAPS Content (lb/gal): 0.12

Density (g/L)	Density(lbs / gal)	Volatiles wt. %	Water wt. %	Exempt wt. %	Water vol. %	Exempt vol. %	NV (Solids) Volume %
1,203	10.04	59.8	52.0	0.0	62.7	0.0	26.3

Top for basecoat 991108/1

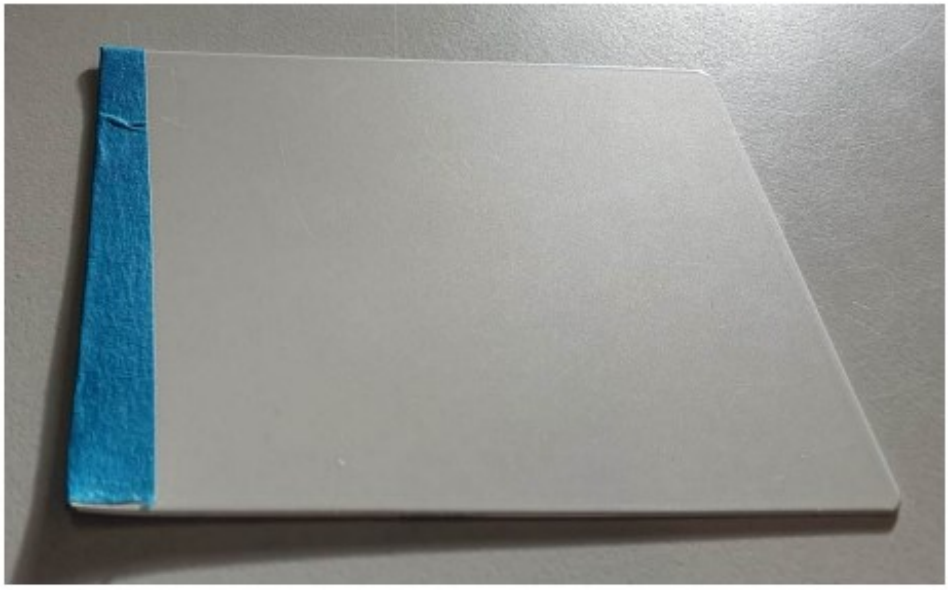
Tinted Clearcoat/Transparent Coat:991108/2
Price Code:A
SDS Number:EHP1
Revision Date:5/11/2022

Code	Description	Gms/Qt	CML.
T490	CLEAR	835.20	835.20
T451	WHT PEARL	47.70	882.90
T4705	LIQUID METAL 2	35.80	918.70
T402	WEAK WHITE	34.80	953.50

HAPS Content (lb/gal): 0

Density (g/L)	Density(lbs / gal)	Volatiles wt. %	Water wt. %	Exempt wt. %	Water vol. %	Exempt vol. %	NV (Solids) Volume %
1,007	8.41	82.2	71.5	0.0	72.3	0.0	17.6

Color Shade Template:



Application Process:

Mixing the Colors:

Left Side: Coat Solid Basecoat

Right Side: Coat Lasur containing T4705

First Layer Solid Basecoat:

The first layer contains three components: T*493*/T492 /T494

Mix Ratio: 100 : 5 : 10 : 10 parts by weight

Application first Layer Solid Basecoat:

Coats:	½ + 1 full coat without flash off time between coats
Spraygun Set-Up:	SATA Jet X 5500 RP / 1,1 mm Nozzle and i-Aircap* *(*one Set-Up for full Process)*
alternative:	IWATA WS 400 Serie 2 / 1,2 mm HD Nozzle
Pressure:	1,8 bar
Adjustment material flow:	Nozzle fully open
Flash Off Time:	20 min / 40°C to fully dry

Second Layer Lasur:

The second layer contains one component: T494

Mix Ratio: 100 : 30* Parts by weight

T492 was not used to get a clear picture of the blotchiness. Instead, *50 parts of T494 were used in initial trials, but the effect of the T4705 was too slight.

Application second layer Lasur:

The second layer was built up very carefully to minimize the wetness of the surface.
If the glaze is applied too wet, patchiness will form immediately and cannot be corrected later.

Coats:	4 cross coats (double coat) with flash off between coat until fully dry *(5 by IWATA)*
Spraygun Set-Up:	SATA Jet X 5500 RP / 1,1 mm Nozzle and i-Aircap* *(*one Set-Up for full Process)*
alternative:	IWATA WS 400 Serie 2 / 1,2 mm HD Nozzle
Pressure:	1,8 bar
Adjustment material flow:	SATA Nozzle 1 ½ turns open / IWATA Nozzle 2 turns open
Flash Off Time:	15 min / 21°C to fully dry (Air-Movement)

Light coats:	2 cross coats (double coat) with flash off between coat until fully dry
Spraygun Set-Up:	SATA Jet X 5500 RP / 1,1 mm Nozzle and i-Aircap* *(*one Set-Up for full Process)*
alternative:	IWATA WS 400 Serie 2 / 1,2 mm HD Nozzle
Pressure:	1,8 bar
Adjustment material flow:	SATA Nozzle 1 turn open / IWATA Nozzle 1½ turns open
Flash Off Time:	15 min / 21°C to fully dry (Air-Movement)

Clearcoat:	P190-8001 / P210-8817 / P852-1662
Spraygun Set-Up:	SATA Jet X 5500 RP / 1,2 mm Nozzle and i-Aircap
alternative:	IWATA WS 400 Serie 2 / 1,3 mm HD Nozzle
Pressure:	2,0 bar
Adjustment material flow:	Both Sprayguns Nozzle fully open
Flash Off between coats:	5 min / 21°C
Drying Time / Temp.:	25 min / 40°C

Color match:

Daylight

Left side: Template from Stow market Right side: reached color tone

Sunlight

Left side: Template from Stow market Right side: reached color tone

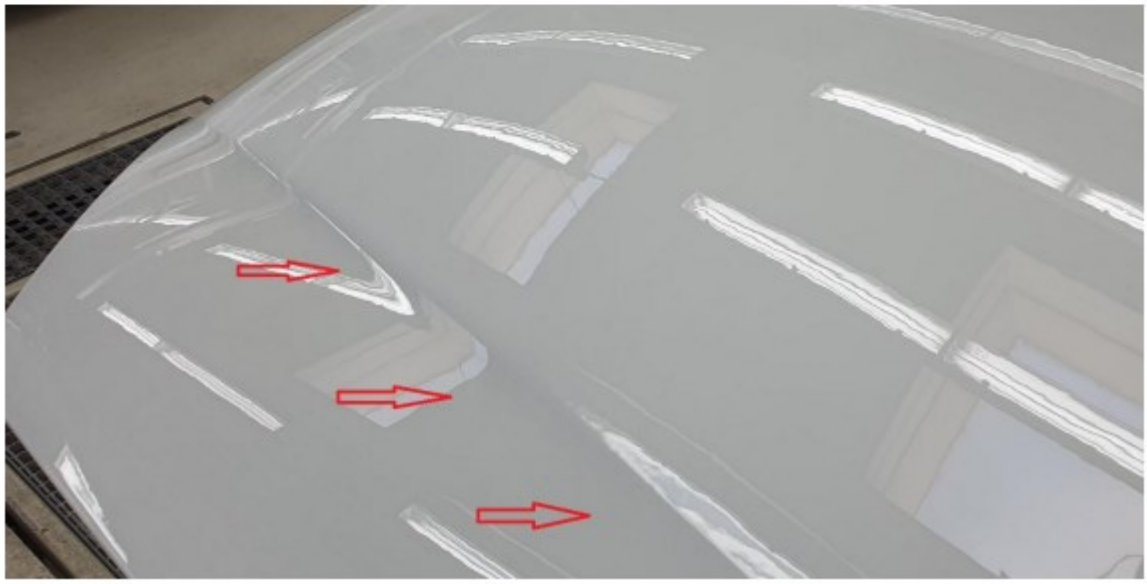
With the application process described above, it was possible to reproduce the color template relatively well.

Final appearance of the painted hood:

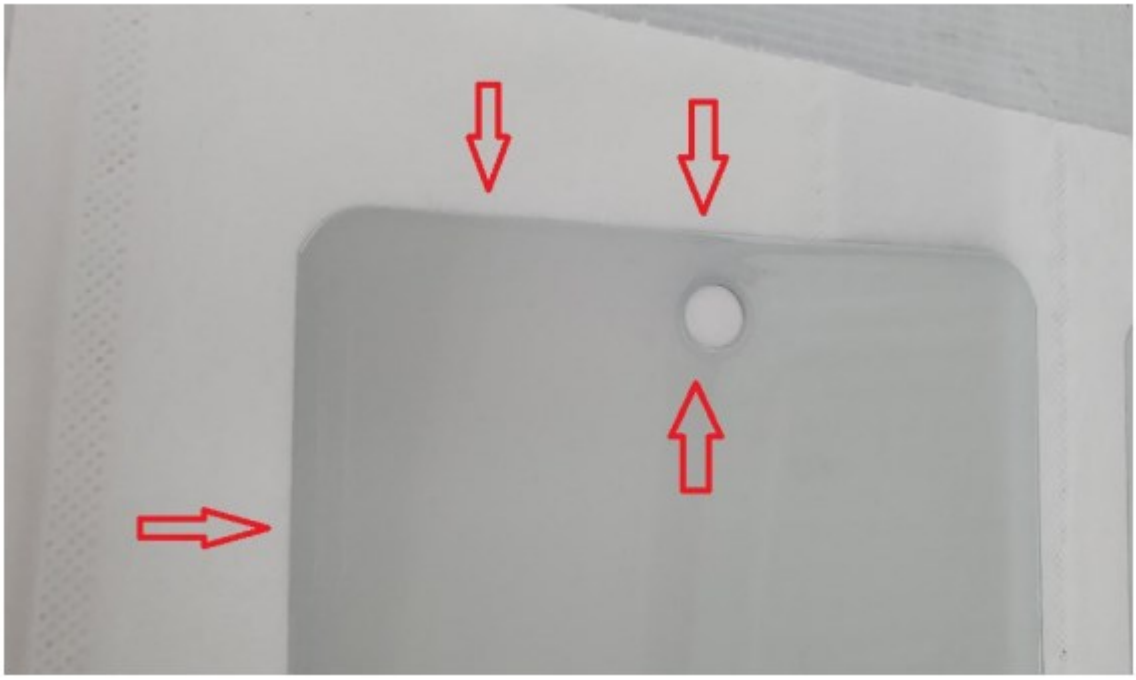
An improvement to the standard application was achieved in the documented process. The result is not market-acceptable due to the following explained faults:

Viewing the objects in the artificial light of the body shop

Unfortunately, the degree of patchiness cannot be documented photographically, but it is clearly visible and can be perceived as a disturbance.



The red arrows mark a silver colored edge in the beading of the hood. Despite all caution and long air-drying times, T4705 has shown itself here.

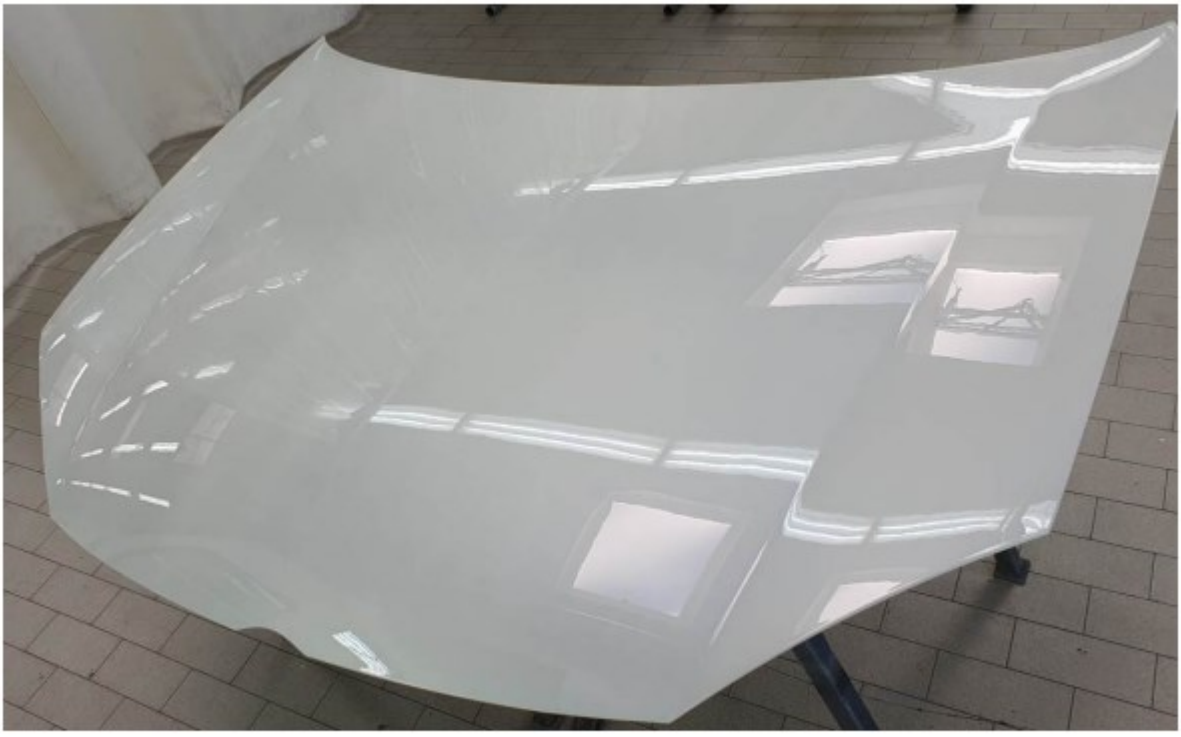


The deposition of the T4705 in the area of the edges of the color charts is clearly visible.

In direct sunlight, the results are slightly better but only borderline acceptable.

Unfortunately, the effect of the T4705 in the second layer is not photographically representable.

The standard application with a SATA Jet X 5500 HVLP 1.3 mm nozzle and O-Air cap:



With the standard application, a clear stripe and a strong patchiness formation can also be seen in the photos.

This result is to be expected when a conventional standard process is used by customers to apply the color MAZDA 51K Rhodium White.

SATA Jet X 5500 RP / 1,1 mm Nozzle and i-Aircap vs. IWATA WS 400 Serie 2 / 1,2 mm HD Nozzle:

Both spray guns can be considered comparable for this process. With the IWATA, the adjustment of the material screw must be opened a little further. It seems that the IWATA applies the Lasur more evenly during application. However, this is not confirmed in the final result.