

# sikkens

## Technical handbook



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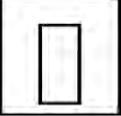
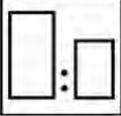
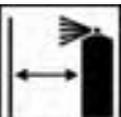
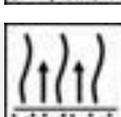
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# Washprimer 1K CF

	<b>RFU</b> Ready For Use (ready to spray)		<b>100 Washprimer 1k CF</b> <b>50 Plus Reducer</b>
	<b>Shake well before use</b>		<b>Spray gun set-up:</b> <b>1.2-1.5</b>
	<b>Distance 10-20 cm</b>		<b>Application pressure:</b> <b>2 bar (air inlet)</b>
	<b>1-2 coats</b> *Flash-off 5-7 minutes between coats		<b>1-2 x 1 coat</b> *Flash-off 5-7 minutes between coats
	<b>Clean nozzle by inverting the aerosol</b>		
	<b>Recoat after:</b> <b>15 minutes at 20°C</b>		<b>Recoat after:</b> <b>15 minutes at 20°C</b>
	<b>Recoat within:</b> <b>24 hours at 20°C</b>		<b>Recoat within:</b> <b>24 hours at 20°C</b>
	Sikkens primers and fillers Sikkens topcoats		Sikkens primers and fillers

\* Washprimer 1k CF cannot be recoated with: Autosurfacer UV, Primer Surfacer EP II, 2K polyester bodyfiller, Polysurfacer, Kombi Filler and direct basecoat application.



See T.D.S. for more product details  
Always wear appropriate PPE

# 1K All Plastics Primer RTS

	<b>RFU</b> Ready For Use (ready to spray)		<b>RFU</b> Ready For Use (ready to spray)
	<b>Shake well before use</b>		<b>Application pressure:</b> 2 bar (air inlet)
	<b>Distance 10-20 cm</b>		<b>Spray gun set-up:</b> 1.2-1.4
	<b>1 coat</b>		<b>1 coat</b>
	<b>Clean nozzle by inverting the aerosol</b>		
	<b>Recoat after:</b> 20 minutes at 20°C		<b>Recoat after:</b> 20 minutes at 20°C
	Sikkens primers and fillers Sikkens topcoats Sikkens Autowave Sikkens clearcoat (headlights)		Sikkens primers and fillers Sikkens topcoats Sikkens Autowave Sikkens clearcoat (headlights)

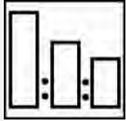


See T.D.S. for more product details  
Always wear appropriate PPE



# Primer Surfacer EPII

(Sanding)



100 Primersurfacer EPII  
50 Primersurfacer EPII Hardener  
40 Plus Reducer

# 12



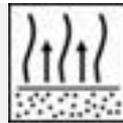
**Application pressure:**  
2 bar (air inlet)



**Spray gun set-up:**  
1.8-2.0



**1-3 x 1 coat**  
For maximum build use a larger fluid tip and lower the application pressure.



**Between coats:**  
5-10 minutes at 20°C



**8 hours at 20°C**  
**45 minutes at 60°C**



**5 minutes low**  
**10 minutes high**

\*Allow for a 5-7 minutes flash-off time before bake

\*Allow for a 5 minutes flash-off time before IR



**P220-P320**



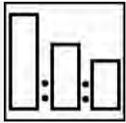
**Recoat with:**  
Sikkens primers/filler  
Sikkens topcoat



See T.D.S. for more product details  
Always wear appropriate PPE

# Primer Surfacer EPII

(Non-Sanding)



100 Primersurfacer EPII  
50 Primersurfacer EPII Hardener  
50 Plus Reducers

**2**



**Application pressure:**  
2 bar (air inlet)



**Spray gun set-up:**  
1.3-1.6



**1 coat**



**30 minutes at 20°C**



**10 minutes at 60°C**



**P220-P320**



**Recoat with:**  
Sikkens primers/filler  
Sikkens topcoat



See T.D.S. for more product details  
Always wear appropriate PPE



# Priming Filler 680 Grey



100 Priming Filler 680 Grey

100 Thinners X

1

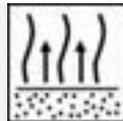


**Application pressure:**  
2 bar (air inlet)

**Spray gun set-up:**  
1.5-1.8



2-3 coats



**Between coats:**  
5-10 minutes at 20°C



30 minutes at 20°C  
20 minutes at 40°C  
15 minutes at 60°C



3 minutes low  
5 minutes high

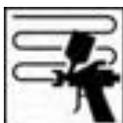
Adhere 5 minutes flash-off time before using IR



P500



P1000

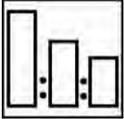


Sikkens topcoat  
Sikkens Autobase Plus



See T.D.S. for more product details  
Always wear appropriate PPE

# Autosurfacers HB (Sanding only)



**5 Autosurfacers HB**  
**1 Plus Hardeners P25-P35**  
**1 Plus Reducers**

# 23



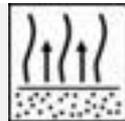
**Application pressure:**  
**2 bar (air inlet)**



**Spray gun set-up:**  
**1.8-2.2**



**3 x1 coat**  
 For maximum build use a larger fluid tip and lower the application pressure.



**Between coats:**  
**5-10 minutes at 20°C**

\*Allow for a 5-10 min. flash-off time before bake



**3 hours at 20°C**  
**30 minutes at 60°C**



**4 minutes low**  
**8 minutes high**

\*Allow for a 5 minutes flash-off time before IR



**P500**

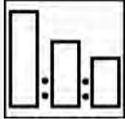


Recoat with:  
 Sikkens topcoat  
 Sikkens Autobase Plus  
 Sikkens Autowave



See T.D.S. for more product details  
 Always wear appropriate PPE

# Autosurfacers Rapid (Sanding)



**100 Autosurfacers Rapid**  
**50 Autosurfacers Rapid Hardener (HT)**

**1**



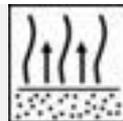
**Application pressure:**  
**2 bar (air inlet)**



**Spray gun set-up:**  
**1.8-2.0**



**3 x1 coat**  
For maximum build use a larger fluid tip and lower the application pressure.



**Between coats:**  
**5-7 minutes at 20°C**

\*Allow for a 5-7 minutes flash-off time before bake



**45 minutes at 20°C**  
**20 minutes at 60°C**



**4 minutes low**  
**8 minutes high**

\*Allow for a 5 minutes flash-off time before IR



**P500**



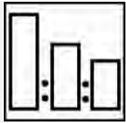
**Recoat with:**  
Sikkens topcoat  
Sikkens Autowave



See T.D.S. for more product details  
Always wear appropriate PPE

# Autosurfacers Rapid

(Non-Sanding)

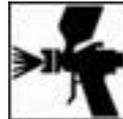


100 Autosurfacers Rapid  
50 Autosurfacers Rapid Hardener (HT)  
40 Plus Reducer

# 12



Application pressure:  
2 bar (air inlet)



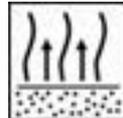
Spray gun set-up:  
1.3-1.4



1 coat



Flash-off:  
15 minutes at 20°C



Recoat within:  
24 hours at 20°C



Recoat with:  
Sikkens topcoat  
Sikkens Autobase Plus

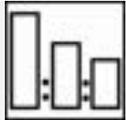


See T.D.S. for more product details  
Always wear appropriate PPE



# Autosurfacers Rapid

(Non-Sanding)



- 3 Autosurfacers Rapid
- 1 Autosurfacers Rapid Hardener (HT)
- 2 Autosurfacers Rapid Non Sanding Reducer

# 15



**Application pressure:**  
2 bar (air inlet)



**Spray gun set-up:**  
1.3-1.4



**1 coat**



**Flash-off:**  
15 minutes at 20°C



**Recoat within:**  
24 hours at 20°C

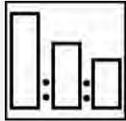


**Recoat with:**  
Sikkens topcoat  
Sikkens Autowave



See T.D.S. for more product details  
Always wear appropriate PPE

# Colorbuild Plus (Sanding)



**3** Colorbuild Plus  
**1** Colorbuild Plus Hardener Sanding  
**10%** Colorbuild Plus Activator: Extra Fast/Fast/Slow

# 35



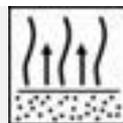
**Application pressure:**  
**2 bar (air inlet)**



**Spray gun set-up:**  
**1.8-2.0**



**3 x1 coat**  
 For maximum build use a larger fluid tip and lower the application pressure.



**Between coats:**  
**4-6 minutes at 20°C**

\*Allow for a 4-6 minutes flash-off time before bake



**1 ½ hours at 20°C**  
**30 minutes at 60°C**



**4 minutes low**  
**8 minutes high**

\*Allow for a 5 minutes flash-off time before IR



**P500**

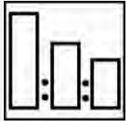


Recoat with:  
 Sikkens topcoat  
 Sikkens Autowave



See T.D.S. for more product details  
 Always wear appropriate PPE

# Colorbuild Plus (Non-Sanding)



**3** Colorbuild Plus  
**1** P25 Hardener  
**1** Plus Reducers

**9**



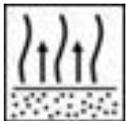
**Application pressure:**  
**2 bar (air inlet)**



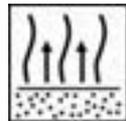
**Spray gun set-up:**  
**1.3-1.4**



**1 coat**



**Flash-off:**  
**15 minutes at 20°C**



**Recoat within:**  
**4 hours at 20°C**

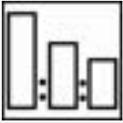


**Recoat with:**  
 Sikkens topcoat  
 Sikkens Autobase Plus  
 Sikkens Autowave



See T.D.S. for more product details  
 Always wear appropriate PPE

# Colorbuild Plus Plastic Additive (Non-Sanding)

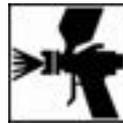


- 100 Colorbuild Plus
- 25 Colorbuild Plus Hardener Non Sanding
- 35 Colorbuild Plus Plastic Additive
- Colorbuild Plus Plastic Additive HT (>30°C)

# 5



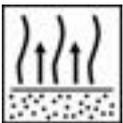
**Application pressure:**  
2 bar (air inlet)



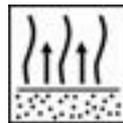
**Spray gun set-up:**  
1.3-1.4



**1 coat**



**Flash-off:**  
15 minutes at 20°C



**Recoat within:**  
24 hours at 20°C



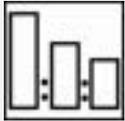
**Recoat with:**  
Sikkens topcoat  
Sikkens Autowave



See T.D.S. for more product details  
Always wear appropriate PPE



# Colorbuild Plus (Non-Sanding)



**3** Colorbuild Plus  
**1** P25 Hardener  
**1** Plus Reducers

**9**



**Application pressure:**  
**2 bar (air inlet)**



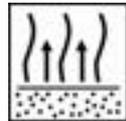
**Spray gun set-up:**  
**1.3-1.4**



**1 coat**



**Flash-off:**  
**15 minutes at 20°C**



**Recoat within:**  
**4 hours at 20°C**

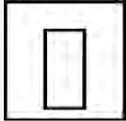


**Recoat with:**  
 Sikkens topcoat  
 Sikkens Autobase Plus  
 Sikkens Autowave



See T.D.S. for more product details  
 Always wear appropriate PPE

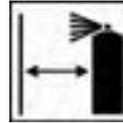
# Spotprimers RTS



**RFU Spotprimers RTS**  
Ready For Use (ready to spray)



**Shake well before use**



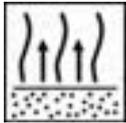
**Distance 10-20 cm**



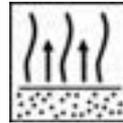
**2-3 x 1 coat**



**Clean nozzle by inverting the aerosol**



**Between coats:  
5-10 minutes at 20°C**



**Recoat after:  
20 minutes at 20°C**



**30 minutes at 20°C  
15 minutes at 60°C**



**3 minutes low  
5 minutes high**

\*Adhere 5 minutes flash-off time before using IR



**P500**



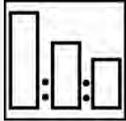
**Sikkens Topcoats  
Autobase Plus  
Autowave**

\* Used only on small sanded-through spots!  
\* For larger areas use 2K Filler 540/2K High build Filler



See T.D.S. for more product details  
Always wear appropriate PPE

# Autocryl Plus



100 Autocryl Plus  
50 P Hardeners  
30 Plus Reducers

1



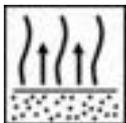
**Application pressure:**  
2 bar (air inlet)



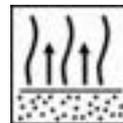
**Spray gun set-up:**  
1.3-1.4



2 x 1 coat



**Between coats:**  
3-5 minutes at 20°C



**Before curing:**  
5-10 minutes at 20°C



**P15:** 4 hours at 20°C  
**P25:** 10 hours at 20°C  
**P35:** 11 hours at 20°C  
**P45:** 11 hours at 20°C



**P15:** 15 minutes at 60°C  
**P25:** 25 minutes at 60°C  
**P35:** 35 minutes at 60°C  
**P45:** 35 minutes at 60°C

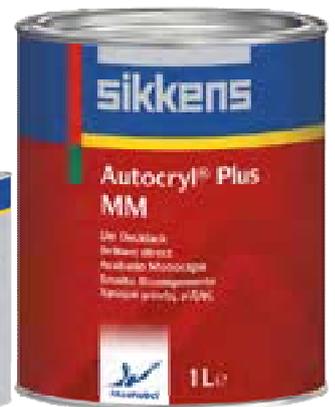


**6 minutes low**  
**6 minutes high**

\*Allow for a 5 minutes flash-off time before IR

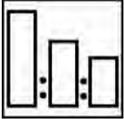
Potlife's:  
P15 Hardener  
P25 Hardener  
P35 Hardener  
P45 Hardener

1 ½ hour at 20°C  
2 hours at 20°C  
3 hour at 20°C  
3 ½ hours at 20°C



See T.D.S. for more product details  
Always wear appropriate PPE

# Sealer Plus



100 Sealer Plus  
50 P25 Hardener  
25 Plus Reducers

# 11



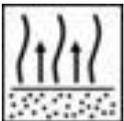
**Application pressure:**  
2 bar (air inlet)



**Spray gun set-up:**  
1.2-1.5



**1 coat**



**Flash-off**  
15 minutes at 20°C



**Recoat within**  
3 hours minutes at 20°C

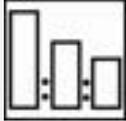


**Recoat with:**  
Sikkens topcoat  
Sikkens Autowave  
Sikkens Autobase Plus



See T.D.S. for more product details  
Always wear appropriate PPE

# Rally Black



100 Autocryl Plus LV  
50 P25 – P35 Hardener  
100 Plus Reducers

1



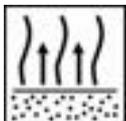
**Application pressure:**  
2 bar (air inlet)



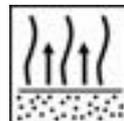
**Spray gun set-up:**  
1.3-1.4



2 x 1 coat



**Between coats:**  
6-10 minutes at 20°C



**Before curing:**  
6-10 minutes at 20°C



**P25 Hardener**  
5 ½ hours at 20°C



**P25 Hardener**  
25 minutes at 60°C

**P35 Hardener**  
8 hours at 20°C

**P35 Hardener**  
35 minutes at 60°C



6 minutes low  
6 minutes high

\*Allow for a 5 minutes flash-off time before IR

Potlife's:  
P25 Hardener  
P35 Hardener

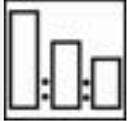
1 ½ hour at 20°C  
2 hours at 20°C



See T.D.S. for more product details  
Always wear appropriate PPE



# Rally Black



- 3 Autocryl Plus LV
- 1 Autocryl Plus LV Hardener
- 2 Autocryl Plus LV Thinner (Thinner HT)
- Autocryl Plus LV Accelerator

# 15



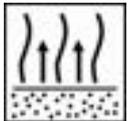
**Application pressure:**  
2 bar (air inlet)



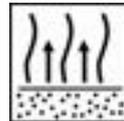
**Spray gun set-up:**  
1.3-1.4



2 x 1 coat



**Between coats:**  
6-10 minutes at 20°C



**Before curing:**  
6-10 minutes at 20°C



**Accelerator**  
2 hours at 20°C



**Accelerator**  
15 minutes at 60°C

**Thinner**  
8 hours at 20°C

**Thinner**  
35 minutes at 60°C

**Thinner (HT)**  
16 hours at 20°C

**Thinner (HT)**  
40 minutes at 60°C



**6 minutes low**  
**6 minutes high**

\*Allow for a 5 minutes flash-off time before IR

**Potlife's:**

Autocryl Plus LV Thinner

3 hours at 20°C

Autocryl Plus LV Thinner HT

4 hours at 20°C

Autocryl Plus LV Accelerator

1 ½ hour at 20°C



See T.D.S. for more product details  
Always wear appropriate PPE



# Autobase<sup>®</sup> Plus



**100 Autobase Plus colours**  
**50 Plus Reducers**

- Plus Reducer Fast; spot and panel repairs, temperature range: 15°C-25°C.
- Plus Reducer Medium; spot and panel repairs and large areas, temperature range: 20°C-30°C.
- Plus Reducer Slow; larger areas and complete paint jobs, temperature range: 25°C-35°C.
- Plus Reducer Extra Slow; to use in extremely hot temperatures, temperature range: above 35°C.



**Application pressure:**  
**2 bar (air inlet)**



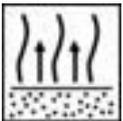
**Spray gun set-up:**  
**1.3-1.4**



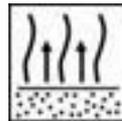
**Metallic and pearl colours:**  
**Full-Intermediate-drop coat**



**Solid colours:**  
**2 x 1 flowing coat**



**Between coats:**  
**2-5 minutes at 20°C**



**Before clearcoat:**  
**15-20 minutes at 20°C**

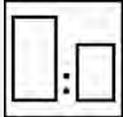


**Autoclear Plus HS**



See T.D.S. for more product details  
Always wear appropriate PPE

# Autobase<sup>®</sup> Classic



**100 Autobase Classic colours**  
**50 Plus Reducers**

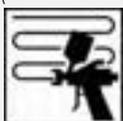
- Plus Reducer Fast; spot and panel repairs, temperature range: 15°C-25°C.
- Plus Reducer Medium; spot and panel repairs and large areas, temperature range: 20°C-30°C.
- Plus Reducer Slow; larger areas and complete paint jobs, temperature range: 25°C-35°C.
- Plus Reducer Extra Slow; to use in extremely hot temperatures, temperature range: above 35°C.



**Application pressure:**  
**2 bar (air inlet)**



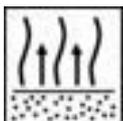
**Spray gun set-up:**  
**1.3-1.4**



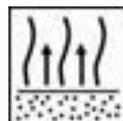
**Metallic and pearl colours:**  
**Full-Intermediate-drop coat**



**Solid colours:**  
**2 x 1 flowing coat**



**Between coats:**  
**2-5 minutes at 20°C**



**Before clearcoat:**  
**15-20 minutes at 20°C**



**Autoclear<sup>®</sup> Plus HS**  
**Autoclear<sup>®</sup> LV Supreme**  
**Autoclear<sup>®</sup> Rapid**  
**Autoclear<sup>®</sup> Basiq HS**



See T.D.S. for more product details  
 Always wear appropriate PPE



# Autowave<sup>®</sup> MM



**Shake Autowave<sup>®</sup> MM before use**

\*Ready for use!

\*Always stir metallic MM colours prior to first use!



**100 Solid and pearl colours**  
**0-10 Activator WB**



**100 Dark to medium metallic colours**  
**10-20 Activator WB**



**100 Silver metallic colours**  
**20-30 Activator WB**



**Application pressure:**  
**2 bar (air inlet)**



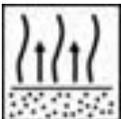
**Spray gun set-up:**  
**1.3-1.4**



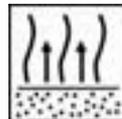
**Metallic and pearl colours:**  
**Full-Intermediate-drop coat**



**Solid colours:**  
**2 x 1 flowing coat**



**Between coats:**  
**Until matt finish**



**Before clearcoat:**  
**15 minutes at 20°C**



**Sikkens Autoclear LV Superior**  
**Sikkens LV Exclusive**



See T.D.S. for more product details  
Always wear appropriate PPE

# Argentum SEC

## Special Effects Color



### Apply black pre-coat

Colorbuild Plus black or Autocryl Plus black.  
Do not sand, abrade or touch the applied topcoat.  
Secure the pre-coat is fully cured.  
Apply Argentum directly after cool down within maximum 30 minutes.



### Shake Argentum before use

Ready for use!



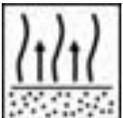
**Application pressure:**  
2 bar (air inlet)



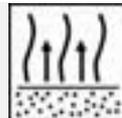
**Spray gun set-up:**  
1.3-1.4



3 x 1 coat



**Between coats:**  
4-8 minutes at 20°C



**Before clearcoat:**  
20 minutes at 20°C



Sikkens Autoclear® Plus HS  
Sikkens Autoclear® Rapid



See T.D.S. for more product details  
Always wear appropriate PPE



# Autowave<sup>®</sup> Argentum 338SA

## Special Effects Color



### Apply black pre-coat

Colorbuild Plus black or Autocryl Plus LV black.  
Do not sand, abrade or touch the applied topcoat.  
Secure the pre-coat is fully cured.

Apply Autovave<sup>®</sup> Argentum directly after cool down within maximum 30 minutes.



### Shake Autovave<sup>®</sup> Argentum before use

Ready for use!



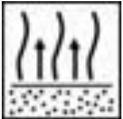
**Application pressure:**  
2 bar (air inlet)



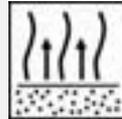
**Spray gun set-up:**  
1.3-1.4



5-6 coats



**Between coats:**  
Until matt finish



**Before clearcoat:**  
30 minutes at 20°C

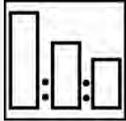


Sikkens Autoclear LV Superior  
Sikkens LV Exclusive



See T.D.S. for more product details  
Always wear appropriate PPE

# Autoclear<sup>®</sup> Plus HS



100 Autoclear<sup>®</sup> Plus HS  
50 P Hardeners  
10 Plus Reducers

# 3



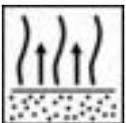
**Application pressure:**  
2 bar (air inlet)



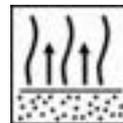
**Spray gun set-up:**  
1.3-1.4



**2 x 1 coat**



**Between coats:**  
5-10 minutes at 20°C



**Before curing:**  
5-10 minutes at 20°C



**P15: 4 hours at 20°C**  
**P25: 6 hours at 20°C**  
**P35: 10 hours at 20°C**  
**P45: 10 hours at 20°C**



**P15: 15 minutes at 60°C**  
**P25: 35 minutes at 60°C**  
**P35: 45 minutes at 60°C**  
**P45: 45 minutes at 60°C**



**5 minutes low**  
**6 minutes high**

\*Allow for a 5 minutes flash-off time before IR

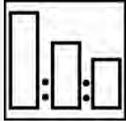
Potlife's:  
P15 Hardener  
P25 Hardener  
P35 Hardener  
P45 Hardener

3 hours at 20°C  
4 hours at 20°C  
6 hours at 20°C  
7 hours at 20°C



See T.D.S. for more product details  
Always wear appropriate PPE

# Autoclear<sup>®</sup> HSR Antiscratch

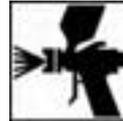


**100** Autoclear<sup>®</sup> HSR Antiscratch  
**50** P Hardeners  
**10** Plus Reducers

**3**



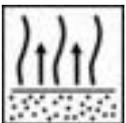
**Application pressure:**  
**2 bar (air inlet)**



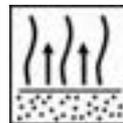
**Spray gun set-up:**  
**1.3-1.4**



**2 x 1 coat**



**Between coats:**  
**5-10 minutes at 20°C**



**Before curing:**  
**5-10 minutes at 20°C**



**P15: 4 hours at 20°C**  
**P25: 6 hours at 20°C**  
**P35: 10 hours at 20°C**  
**P45: 10 hours at 20°C**



**P15: 15 minutes at 60°C**  
**P25: 35 minutes at 60°C**  
**P35: 45 minutes at 60°C**  
**P45: 45 minutes at 60°C**

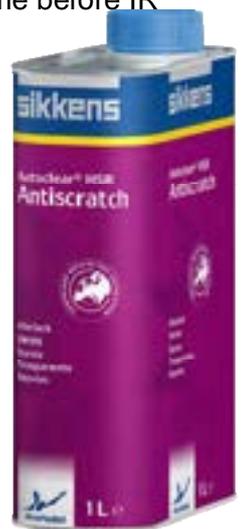


**5 minutes low**  
**6 minutes high**

\*Allow for a 5 minutes flash-off time before IR

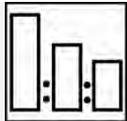
Potlife's:  
 P15 Hardener  
 P25 Hardener  
 P35 Hardener  
 P45 Hardener

3 hours at 20°C  
 4 hours at 20°C  
 6 hours at 20°C  
 7 hours at 20°C



See T.D.S. for more product details  
 Always wear appropriate PPE

# Autoclear<sup>®</sup> LV Superior



100 Autoclear<sup>®</sup> LV Superior  
 60 Autoclear<sup>®</sup> LV Superior Hardener  
 20 Autoclear<sup>®</sup> LV Superior Accelerator

# 31



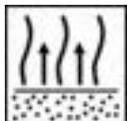
**Application pressure:**  
 2 bar (air inlet)



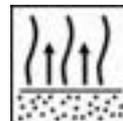
**Spray gun set-up:**  
 1.3-1.4



**2 x 1 coat**



**Between coats:**  
 3-5 minutes at 20°C



**Before curing:**  
 3-5 minutes at 20°C



**Fast:** 3 hours at 20°C  
**Medium:** 3 hours at 20°C



**Fast:** 12 min. at 60°C  
**Medium:** 15 min. at 60°C



**4 minutes low**  
**8 minutes high**

\*Allow for a 5 minutes flash-off time before IR

**Potlife's:**

Autoclear<sup>®</sup> LV Superior Fast  
 Autoclear<sup>®</sup> LV Superior Medium

Autoclear<sup>®</sup> LV Superior Accelerator  
 Autoclear<sup>®</sup> LV Superior Accelerator

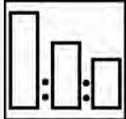
30 minutes at 20°C  
 1 hour at 20°C



See T.D.S. for more product details  
 Always wear appropriate PPE



# Autoclear<sup>®</sup> LV Superior

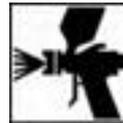


100 Autoclear<sup>®</sup> LV Superior  
 60 Autoclear<sup>®</sup> LV Superior Hardener  
 20 Autoclear<sup>®</sup> LV Superior Reducers

# 31



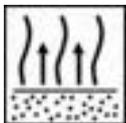
**Application pressure:**  
 2 bar (air inlet)



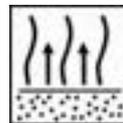
**Spray gun set-up:**  
 1.3-1.4



**2 x 1 coat**



**Between coats:**  
 3-5 minutes at 20°C



**Before curing:**  
 3-5 minutes at 20°C



**Fast:** 6 hours at 20°C  
**Medium:** 7 hours at 20°C  
**Slow:** 8 hours at 20°C



**Fast:** 15 min. at 60°C  
**Medium:** 25 min. at 60°C  
**Slow:** 35 min. at 60°C



**4 minutes low**  
**8 minutes high**

\*Allow for a 5 minutes flash-off time before IR

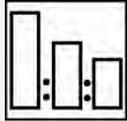
**Potlife's:**

Autoclear <sup>®</sup> LV Superior Fast	Autoclear <sup>®</sup> LV Superior Reducer Fast	30 minutes at 20°C
Autoclear <sup>®</sup> LV Superior Medium	Autoclear <sup>®</sup> LV Superior Reducer Medium	1 hour at 20°C
Autoclear <sup>®</sup> LV Superior Slow	Autoclear <sup>®</sup> LV Superior Reducer Slow	1½ hour at 20°C



See T.D.S. for more product details  
 Always wear appropriate PPE

# Autoclear<sup>®</sup> LV

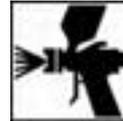


100 Autoclear<sup>®</sup> LV (Autoclear<sup>®</sup> LV Slow)  
 50 Autoclear<sup>®</sup> LV Hardener  
 10 Autoclear<sup>®</sup> LV Reducer

**3**



**Application pressure:**  
 2 bar (air inlet)



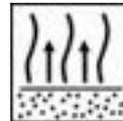
**Spray gun set-up:**  
 1.3-1.4



**2 x 1 coat**



**Between coats:**  
 5-10 minutes at 20°C



**Before curing:**  
 5-10 minutes at 20°C



**Autoclear<sup>®</sup> LV**  
 1½ hour at 20°C



**Autoclear<sup>®</sup> LV Slow**  
 4 hours at 20°C

**Autoclear<sup>®</sup> LV**  
 30 minutes at 50°C

**Autoclear<sup>®</sup> LV Slow**  
 45 minutes at 50°C

**Autoclear<sup>®</sup> LV**  
 20 minutes at 60°C

**Autoclear<sup>®</sup> LV Slow**  
 30 minutes at 60°C



**4 minutes low**  
**8 minutes high**

Potlife:

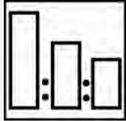
Autoclear<sup>®</sup> LV 30 minutes at 20°C  
 Autoclear<sup>®</sup> LV Slow 45 minutes at 20°C

\*Allow for a 5 minutes flash-off time before IR



See T.D.S. for more product details  
 Always wear appropriate PPE

# Autoclear<sup>®</sup> LV Exclusive



100 Autoclear<sup>®</sup> LV Superior  
 60 Autoclear<sup>®</sup> LV Superior Hardener  
 20 Autoclear<sup>®</sup> LV Superior Accelerator

# 31



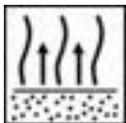
**Application pressure:**  
 2 bar (air inlet)



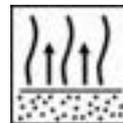
**Spray gun set-up:**  
 1.3-1.4



**2 x 1 coat**



**Between coats:**  
 3-5 minutes at 20°C



**Before curing:**  
 3-5 minutes at 20°C



**40 minutes at 60°C**  
 \*Must be cured at 60°C for optimum result



**4 minutes low**  
**8 minutes high**

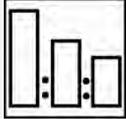
\*Allow for a 5 minutes flash-off time before IR

Potlife: 1 hour at 20°C



See T.D.S. for more product details  
 Always wear appropriate PPE

# Autoclear<sup>®</sup> Mat



Gloss level adjustments clearcoats mixed by volume



## Autoclear<sup>®</sup> Plus HS

		Mixing ratio hardener and Reducers		
Autoclear <sup>®</sup> Mat	Autoclear <sup>®</sup> Plus HS	Clearcoat	Hardener	Reducer
100	0	100	50	30
50	50	100	50	10
0	100	100	50	10

Potlife:

Autoclear Plus HS

3-4 hours at 20°C

Drying times:

Autoclear Plus HS + P25 Hardener

30 minutes at 60°C

Autoclear Plus HS + P35 Hardener

55 minutes at 60°C

Autoclear Plus HS + P45 Hardener

60 minutes at 60°C



## Autoclear<sup>®</sup> Rapid Hardener

		Mixing ratio hardener and Reducers		
Autoclear <sup>®</sup> Mat	Autoclear <sup>®</sup> Rapid	Clearcoat	Rapid Hardener	Reducer
100	0	100	50	30
50	50	100	50	10-20
0	100	100	50	10-20

## Autoclear<sup>®</sup> Rapid P Hardeners

Autoclear <sup>®</sup> Mat	Autoclear <sup>®</sup> Rapid	Clearcoat	P Hardener	Reducer
100	0	100	50	20
50	50	100	50	10-20
0	100	100	50	10-20

Potlife:

Autoclear Rapid Hardener

3-4 hours at 20°C

Drying times:

Autoclear Rapid + P25 Hardener

30 minutes at 60°C

Autoclear Rapid + P35 Hardener

55 minutes at 60°C

Autoclear Rapid + P45 Hardener

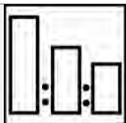
60 minutes at 60°C



See T.D.S. for more product details  
Always wear appropriate PPE

# Autoclear<sup>®</sup> Mix & Matt

Mix & Matt swatch	Gloss level			
		Low gloss	High gloss	
	M1		Low Gloss	Semi Gloss
	M2		100	0
	M3		80	20
	M4		50	50
	M5		20	80
			0	100



100 Autoclear<sup>®</sup> Mix & Matt  
 40 Autoclear<sup>®</sup> Mix & Matt Hardener  
 60 Autoclear<sup>®</sup> Mix & Matt Reducer

# 43



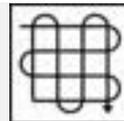
**Application pressure:**  
2 bar (air inlet)



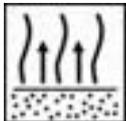
**Spray gun set-up:**  
1.3-1.4



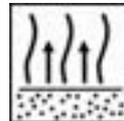
**2 x 1 coat**  
- Total re-spray application  
- Edge to edge application



**Cross coat application on horizontal surfaces.**



**Between coats:**  
15 minutes at 20°C



**Before curing:**  
15 minutes at 20°C



**Reducer Standard**  
1-1½ hour at 20°C  
20-25 minutes at 50°C  
15-20 minutes at 60°C



**Reducer Slow**  
2-3 hours at 20°C  
25-30 minutes at 50°C  
20-25 minutes at 60°C



**6 minutes low**  
**2 minutes high**

\*Allow for a 15 minutes flash-off time before IR

Check also TDS: S8.01.07 Matt finishes, cleaning and maintenance



See T.D.S. for more product details  
Always wear appropriate PPE

# Autowave metallic colour change.....

## Cause:

When Autowave is applied direct over bare metal substrate an electro-chemical reaction between the metal substrate and the metallic flakes in the colour will cause these flakes to corrode. Eventually all that's left on this unprotected spot is a "solid" colour without any metallic effect.  
 \*Ambient humidity (moisture) will speed up this reaction and colour effect/defect!



## How to avoid!

- Sanded through areas must be covered by 1K Spotprimer RTS!
- One thin coat of 1K Spotprimer RTS over the sand through area will do!

White-Grey-Medium Grey-Black



## Surface Cleaning



## Sanding



## 2K Polyester bodyfiller mixing & application



## Paint mixing



## Paint Application



## Cleaning spraying equipment



## Polishing



Work clothing

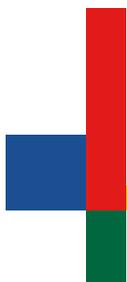
Foot protection

Eye protection

Skin protection

Respiratory protection

Ear protection



## Hazard Symbols

	X - Sensitive Xi - Irritating Xn - Harmful		T - Toxic T+ - Highly toxic
	Flammable		Oxidative
	Highly flammable		Environmental impact
	Corrosive / Burning		

## Prohibition and Indication Symbols

	No open fire		Fire hose
	No smoking		Fire extinguisher
	No cellular phone		Location fire alarm
	Do NOT use water to extinguish fire		No entry

## Aid Symbols

	First aid		Body shower
	Eye shower		Emergency exit

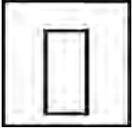
### 1.0 Preparation



1.1

1.1-Cleaning / degreasing

### 2.0 Mixing



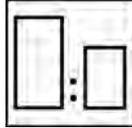
2.1

2.1-Ready to spray



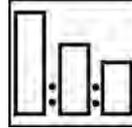
2.2

2.2-Mixing 2 components (equal ratio)



2.3

2.3-Mixing 2 components



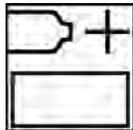
2.4

2.4-Mixing 3 components



2.5

2.5-Mixing by weight



2.6

2.6-Addition of catalyst (putties)



2.7

2.7-Use of a measuring stick

### 3.0 Viscosity reduction



3.1

3.1-Thin to viscosity



3.2

3.2-Water-thinnable

### 4.0 Application



4.1

4.1-Gravity feed spray gun



4.2

4.2-Suction feed spray gun



4.3

4.3-Underseal spray gun



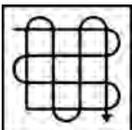
4.4

4.4-SF spray gun application



4.5

4.5-GF spray gun application



4.6

4.6-Cross-wise application



4.7

4.7-Application of putty



4.8

4.8-Application with brush



4.9

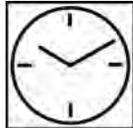
4.9-Application with roller

### 5.0 Drying



5.1

5.1-Flash off / evaporation time



5.2

5.2-Drying time



5.3

5.3-Infra Red drying time



5.4

5.4-UV drying time

### 6.0 Abrading



6.1

6.1-Dry sanding by hand



6.2

6.2-Wet sanding by hand



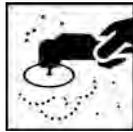
6.3

6.3-Roughen with Scotch Brite

6.4



6.4



6.5



6.6



6.7

- 6.4-Wet sanding - Orbital sander
- 6.5-Dry sanding - Orbital sander
- 6.6-Dry sanding – Flat bed sander
- 6.7-Wet sanding – Flat bed sander

### 7.0 Aerosol



7.1



7.2



7.3



7.4

- 7.1-Shake aerosol before use
- 7.2-Application distance
- 7.3-Aerosol application
- 7.4-Invert aerosol for further use

### 8.0 Polishing



8.1

- 8.1-Polishing

### 9.0 Mixing



9.1



9.2



9.3

- 9.1-Stirring by hand
- 9.2-Stirring by mixing machine
- 9.3-Shake by hand before use

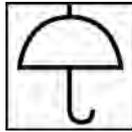
### 10.0 Storage



10.1



10.2



10.3



10.4

- 10.1-Store in a cool place
- 10.2-Store in a frost free place
- 10.3-Protect from humidity
- 10.4-Close packing

### 11.0 Technical Data



11.1

- 11.1-See Technical Data Sheet

### 12.0 Health & Safety



12.1

- 12.0-Use a fresh air supply respirator



1. Estimation



2. Colour check



3. Colour mixing



4. Sanding



5. Bodyfiller application



6. Bodyfiller sanding



7. Sanding



8. Surface cleaning



9. Primer application



10. Filler application



11. Drying



12. Sanding



13. Surface cleaning



14. Colour application



15. Clearcoat mixing



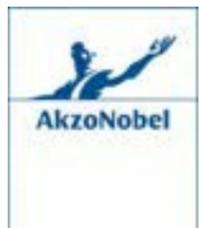
16. Clearcoat application



17. Clearcoat drying



18. Delivery





EU.3.2.28

### Autosurfacers Rapid

Hardener

Hardener HT (>30°C)

**Autosurfacers Rapid Hardener**

1.5-2.0

1-3 coats

between coats: 5-7 min at 20°C  
before curing: 5-7 min at 20°C

45 min at 20°C  
20 min at 60°C

S2.02.01

### Autosurfacers HB

P Hardeners P25 P35

Fast Medium Slow

**Plus Reducers**

1.8-2.2  
1.7-2.2 bar

1-3 coats

between coats: 5-10 min before curing: 5-10 min at 20°C

3 hrs at 20°C  
30 min at 60°C

5.2.49

### Autocryl Plus

P Hardeners

Fast Medium Slow Extra slow

**Plus Reducers**

1.2-1.5  
1.7-2.2 bar

2 coats

between coats: 3-5 min at 20°C  
before curing: 5-10 min at 20°C

4-11 hrs at 20°C  
15-35 min at 60°C

5.2.65

### Autobase Plus

Fast Medium Slow Extra Slow

**Plus Reducers**

1.2-1.5  
1.7-2.2 bar

Solid: 2 x 1 coat  
Metallic 2 x 1 + 1/2 coat

between coats: 3-5 min before curing: 15 min at 20°C

5.2.64

### Autoclear Plus HS

P Hardeners P25 P35

Fast Medium Slow Extra slow

**Plus Reducers**

1.2-1.4  
1.7-2.2 bar

2 coats

between coats: 5-8 min at 20°C  
before curing: 5-10 min at 20°C

9-10 hrs at 20°C  
35 min at 60°C

M600 S4.01.00

**Use suitable respiratory protection**

Akzo Nobel Car Refinishes recommends the use of a fresh air supply respirator.



## Repair process

			<p><b>Estimation</b></p> <p>Scratch / small dent on fender</p>
01.			<p><b>Thoroughly washing with warm soapy water (<math>\pm 50^{\circ}\text{C}</math>)</b></p> <p>Removing the contamination from the panel surface</p>
02.			<p><b>Thoroughly degreasing</b></p> <p>Removing all contamination from the panel surface * Wet the panel with a wet cloth and wipe the panel dry with a dry cloth</p>
03.			<p><b>Removing existing paint finish</b></p> <p>P120 - 1<sup>st</sup> sanding step P220 - 2<sup>nd</sup> sanding step to create a featheredge</p>
04.			<p><b>Thoroughly degreasing</b></p> <p>Removing sanding dust from the panel surface to create optimal adhesion of the polyester bodyfiller. * Wet the panel with a wet cloth and wipe the panel dry with a dry cloth</p>



05.			<p><b>Bodyfiller mixing</b></p> <p>Mix the right amount of peroxide hardener according to T.D.S. recommendation. Overlap the bodyfiller while mixing, do not stir!</p>
06.			<p><b>Bodyfiller application</b></p> <p>Keep the bodyfiller spreader under a 60° angle to avoid air locking, scrape away the edges Apply the bodyfiller only on the bare substrate</p>
07.			<p><b>Infra Red drying bodyfiller</b></p> <p>Consider low potential curing with IR dryer only</p>
08.			<p><b>Sanding the polyester bodyfiller</b> <i>Dry sanding only, wet sanding causes failures</i></p> <p>P120 - 1<sup>st</sup> sanding step P220 - 2<sup>nd</sup> sanding step * Sand cross wise, use guide coat between the different sanding steps</p>
09.			<p><b>Featheredge sanding</b></p> <p>P220 - 1<sup>st</sup> remove block sanding scratches P320 - 2<sup>ndly</sup> extend the featheredge P400 - 3<sup>rd</sup> sand the outer area of the featheredge</p>
10.			<p><b>Thoroughly degreasing</b></p> <p>Removing sanding dust from the panel surface to create optimal adhesion of the primer * Wet the panel with a wet cloth and wipe the panel dry with a dry cloth</p>

11.			<p><b>Primer application</b></p> <p>* Check primer Technical Data Sheet for application and flash off details</p>
12.			<p><b>Surfacer application</b></p> <p>Apply 2 – 3 coats, apply from outside in</p> <p>* Do not apply too close to the masking paper</p> <p>* Check filler Technical Data Sheet for detailed information</p>
13.			<p><b>Infra Red drying of the surfacer</b></p> <p>Consider sufficient flash off time, prior to curing</p>
14.			<p><b>Sanding the surfacer by hand</b></p> <p>P320 - 1<sup>st</sup> sanding step  P400 - 2<sup>nd</sup> sanding step</p> <p>* Leveling the final irregularities in the repair area</p>
15.			<p><b>Sanding the surfacer by machine</b></p> <p>P500 - Sanding the total repair area</p>
16.			<p><b>Panel preparation</b></p> <p>Panel preparation with scuffing materials (grey or copper)</p>



17.			<p><b>Thoroughly degreasing</b></p> <p>Removing all contamination, after drying the panel for clean and easy masking</p> <p>* Wet the panel with a wet cloth and wipe the panel dry with a dry cloth</p>
18.			<p><b>Thoroughly “final” degreasing</b></p> <p>* Wet the panel with a wet cloth and wipe the panel dry with a dry cloth</p> <p>Do not touch the panel by bare hand after degreasing</p> <p>* Sweat or other contamination can cause failures like blistering</p>
19.			<p><b>Basecoat application</b></p> <p>According to Technical Data Sheet recommendation</p> <p>* Respect the flash off times between the coats and before clearcoat application</p>
20.			<p><b>Clearcoat application</b></p> <p>According to Technical Data Sheet recommendation</p>
21.			<p><b>Infra Red drying of the topcoat</b></p> <p>Respect the flash off time of the topcoat, prior to curing with the IR dryer</p>
			<p><b>Finished repair</b></p> <p>After assembling, cleaning and possible polishing the car is ready for delivery</p>



		<b>Machine sanding</b>	
<b>Sanding to bare metal</b>		P120	Remove paint to bare metal
		P220	Remove P120 sanding marks Create smooth feather edge
		<b>Hand sanding</b>	<b>Bodyfiller application</b>
<b>Bodyfiller sanding</b>		P120 P220	Flatten the body filler Remove P120 sanding marks
		<b>Machine sanding</b>	
		P220 P320	Remove scratches from hand sanding Sand surroundings of the repair
		<b>Hand sanding</b>	<b>Filler application</b>
<b>Filler sanding</b>		P320	Initial sanding of the Filler
		<b>Machine sanding</b>	
		P320 P400 P500	Removing hand sanding marks Final sanding in case of 1 coat system Final Sanding in case of 2 coat system



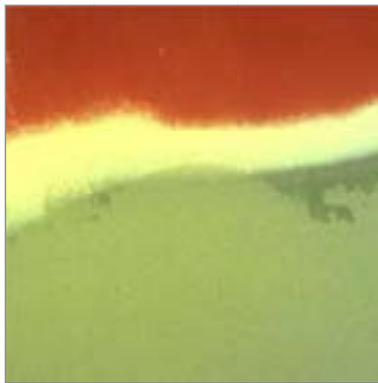


## Polyester bodyfiller application:

When heavy edges of the bodyfiller are applied, the edges become difficult to sand, the sanding block will tumble on the edge and will cut in the surrounding paint area, creating a new edge. Risk for contour mapping.



60° application angle



Correct application



Incorrect application

- Only on the bare metal (or on top of fully cured and sanded Primer Surfacer EPII)
- Edges need to be scraped away; this makes sanding much easier.
- Keep the knife or spreader in a 60° angle during application.

## Primer Surfacer application:

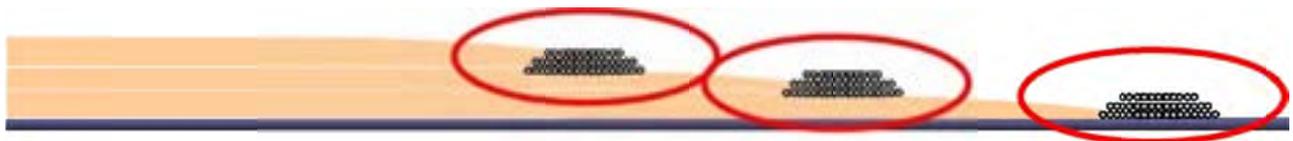


### Inside-out application:

Overspray that's covered by seceding layers.

When sanding back the primer surfacer there is a risk for:

- Contour map.
- Adhesion problems around the repair area.



### Outside-in application:

Overspray lies on top of the applied layers.

- No risk, easy removed by sanding.

## Masking:

### Masking foil:

- By using mainly plastic is most efficient and consumes minimum time.
- Total car is protected against overspray; cut out the panel(s) to paint.
- Use masking tape for final masking.



Transparent foil



Humidity controlling foil



Foil and tape; minimum paper

### Efficient masking:

Dependent of the type of repair; one single masking step in the repair process;

- Preparation of the total panel; ready to paint.
- Sanding the area to repair; sanding, bodyfiller, sanding.
- Cleaning and masking total panel; masking the panel area to apply primer surfacer.
- Primer surfacer application; drying.
- Masking



## Products in coatings

### Solvents in coatings....

- Are defined as the volatile liquid portion which:
- Acts as the vehicle
- Adjust viscosity
- Optimize flow of the wet paint film
- Optimize final uniformity of the coating on the substrate



### Color pigments in coatings....

- Pigments are defined as insoluble particles of coloring matter which are dispersed in a liquid to make paint.
- Their roles are to impart color and color effects.



### Binders in coatings....

- Binders are the cement inside the coating
- Binding the pigment particles together
- Adhere the coating to its substrate
- Provide a physical and chemical barrier to protect the substrate

Binders also create the paint's

- Drying properties
- Flexibility
- Chemical resistance

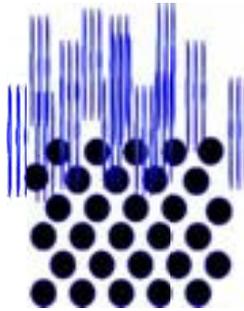
### Additives in coatings....

- To optimize product performance, such as:
- Pigment dispersant
- Ultra violet absorbent
- Anti-foaming agent
- Leveling agent
- Color separation deterrent
- Anti-settle deterrent
- Fungicides or bactericides (waterborne)

## One component solvent borne drying characteristics

Physical drying;

- Solvent evaporation
- Influenced by temperature



Flash-off time



Dry paint film

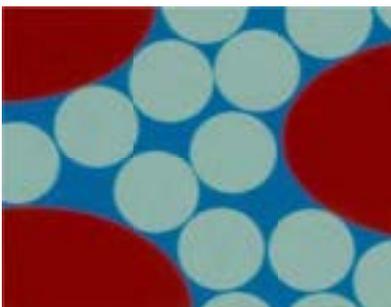
## One component waterborne drying characteristics

Physical drying;

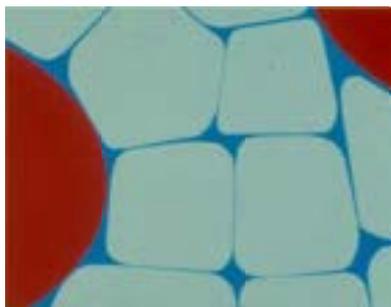
- Water evaporation
- Influenced by temperature

Additional influencing factors for waterborne evaporation;

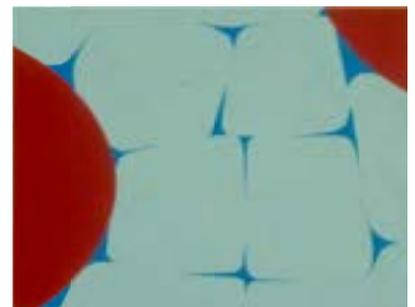
- Air movement
- Humidity (waterborne)



Red; paint particles  
White; binder  
Blue; water

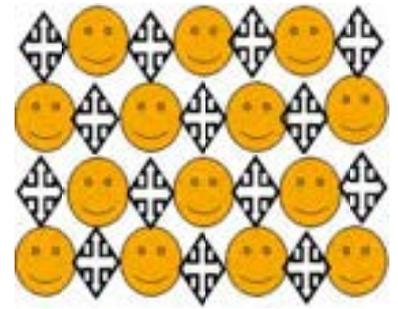
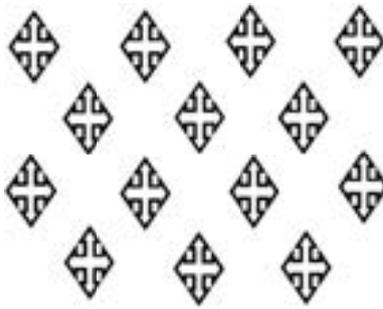
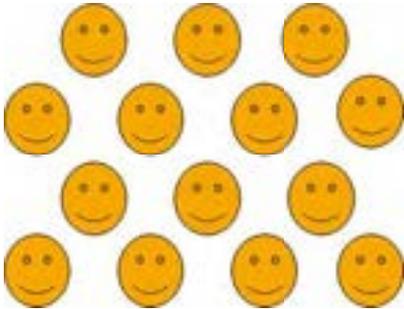


Water evaporation; binder starts to melt together.



Water evaporated; binder has glued together limited amount of water evaporated during final flash-off.

## Two component solvent borne drying characteristics



Product (A) + Hardener (B) mixed according optimum mixing ratio. All A and B components are connected after fully curing.



Too much hardener (B component) added to the product. Even after fully through hardening, Hardener components unconnected in the paint film causing a higher risk for;

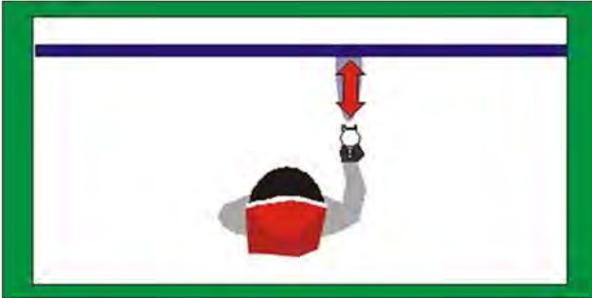
- Blistering; humidity reacting with Hardener.
- Blushing/Blooming; humidity reacting with Hardener.
- Longer drying times.



Insufficient hardener (B component) in the product mixture. Hardener components are connected but due to the lower hardener amount there is insufficient cross-linking causing a higher risk for;

- Insufficient through hardening.
- Longer drying times.

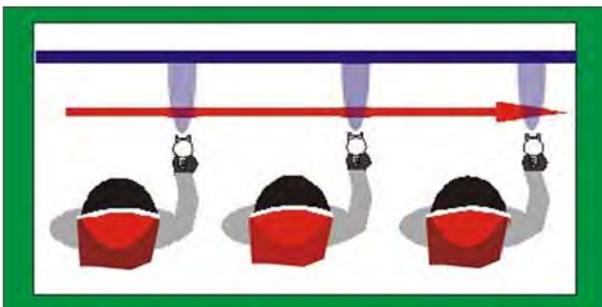
## Application Technique



Application distance is related to application speed and air pressure and mainly determined by the painter's personal preference.

> application speed < application distance  
< application speed > application distance

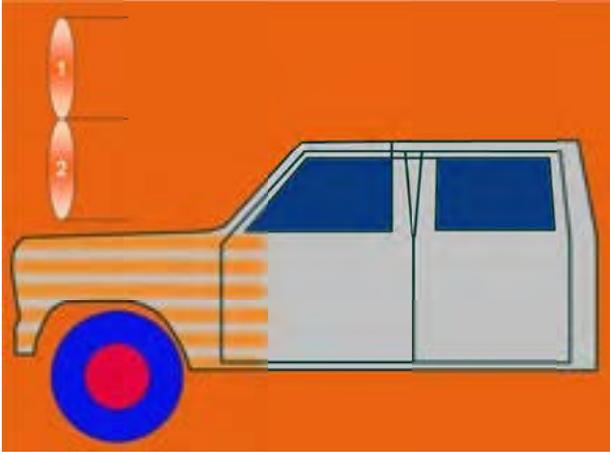
Move the spray gun evenly over the surface to paint.



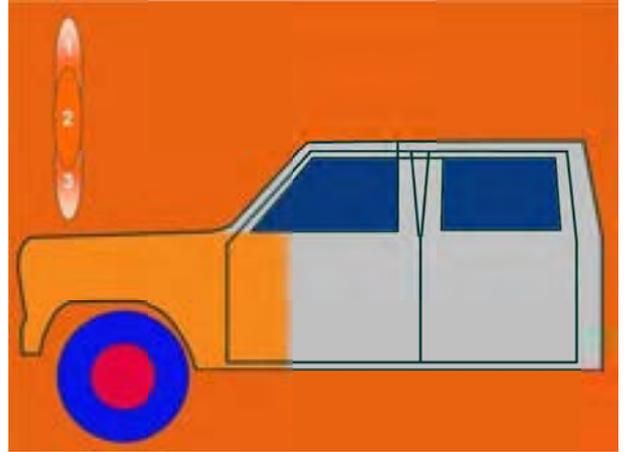
Follow the contours of the object to paint while applying the paint for an even finish.



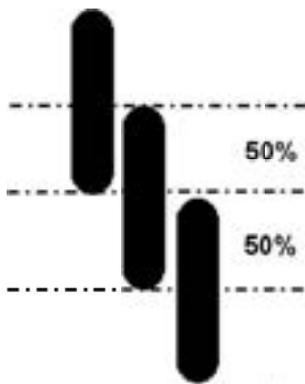
**50% overlap of each layer**



Incorrect

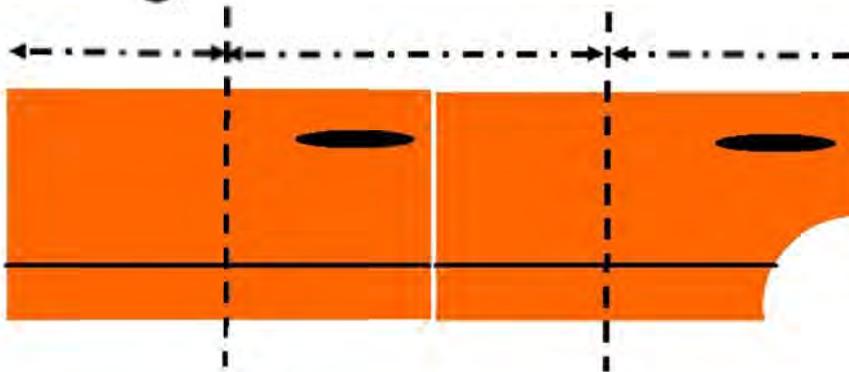


Correct



Each coat shows and 50% overlap.  
 ➤ For all paint products.

Incorrect or insufficient overlap;  
 ➤ Dark lines in the basecoat colours.  
 ➤ Poor covering.  
 ➤ Uneven finish; orange peel.



Apply from the centre of one panel to the centre of the next panel; blending the paints over this area in case of multiple layer application, avoiding heavy paint layers on the centre of the panels

## Spray pattern's



- Correct spray pattern, to be checked before spraying.
- Hold the spraygun ±15 cm from the masking paper or plastic.
  - Pull the trigger fully open.



- Narrow on top or bottom; paint build-up on air cap/nozzle
- Solution:
- Clean the air-cap and fluid tip with a hard brush and cleaning solvent.
  - Do not use a steel wire as it will damage the metal.



- Narrow at the center; incorrect spraying viscosity or a too high air pressure.
- Solution:
- Adjust the air pressure to TDS recommendations.
  - Mix product according TDS data.



- Build-up at the center; incorrect spraying viscosity or a too low air pressure.
- Solution:
- Adjust the air pressure to TDS recommendations.
  - Mix product according TDS data.



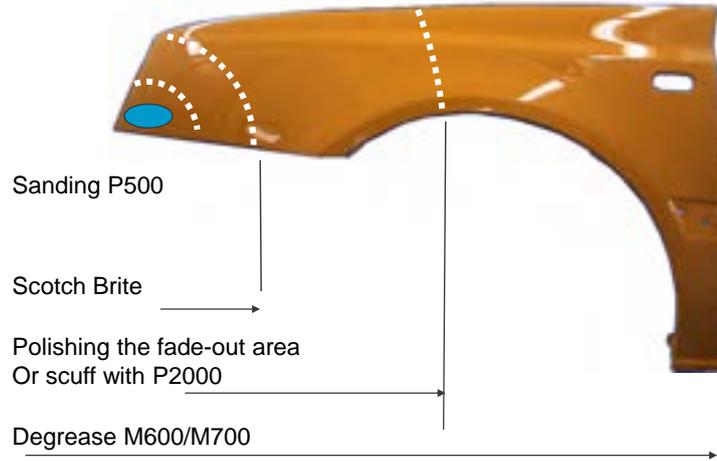
- False air; the air cap or fluid tip is insufficiently tightened. The washer (seal ring), behind the nozzle can be worn out. Incorrect airflow of the spraygun.
- Solution:
- Tighten the air cap and or nozzle
  - Replace the nozzle washer



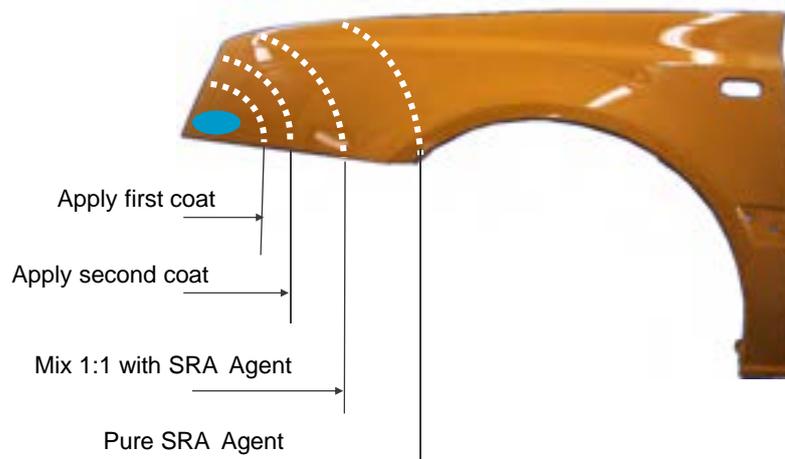
- Bent spray pattern (half ellipse); paint build-up on air nozzle or air cap.
- Solution:
- Clean the air-cap and fluid tip with a hard brush and thinner
  - Do not use a steel wire as it will damage the metal.

\*Each spray gun supplier can supply leaflets with detailed information on incorrect spray pattern

## 2 Coat Spot repair preparation



## 2 Coat Spot repair application



sikkens

## 2 Coat Spot repair

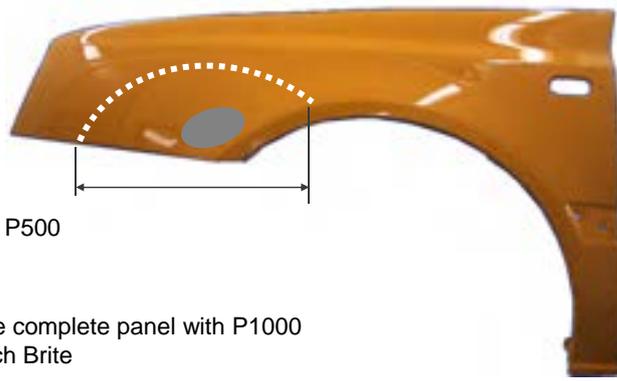


Polishing the fade-out area



sikkens

## 2 Coat blending-method



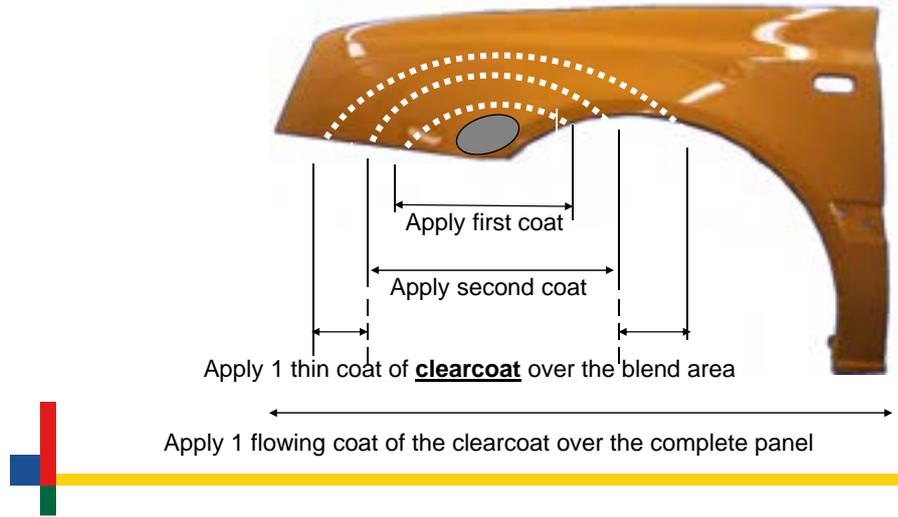
Sanding P500

Sand the complete panel with P1000  
Or Scotch Brite

Degrease M600/M700



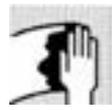
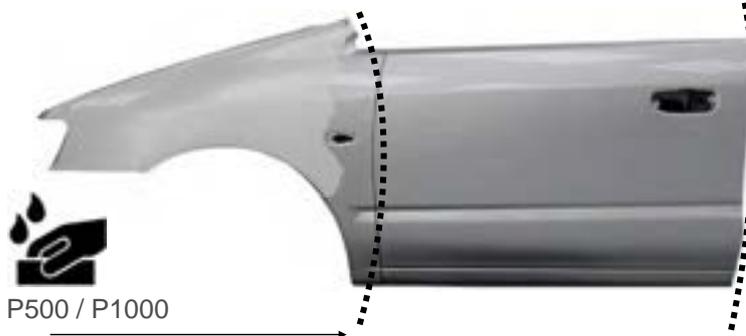
## 2 Coat Blending-method



## Finished!



### Autobase Plus/Classic Panel-repair

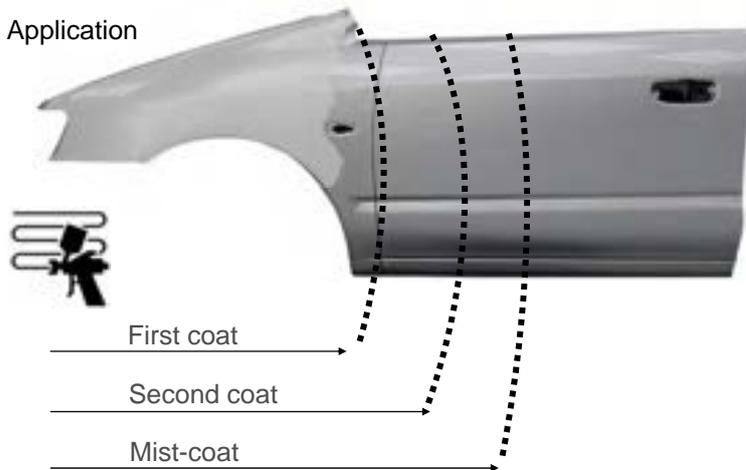


Scotch Brite

Degrease M600/M700

### Autobase Plus/Classic Panel-repair

Application





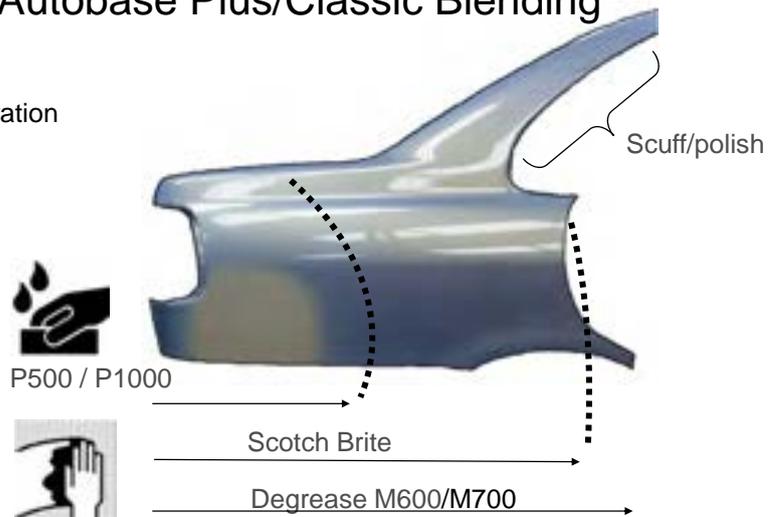
## Autobase Plus/Classic Panel-repair

Clearcoat



## Autobase Plus/Classic Blending

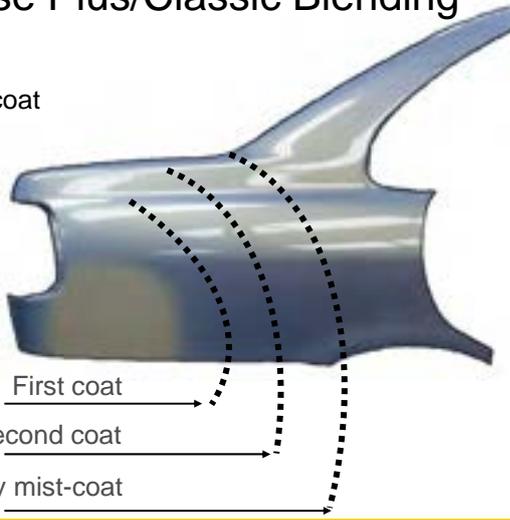
Preparation





## Autobase Plus/Classic Blending

Application base coat



First coat

Second coat

Apply mist-coat



## Autobase Plus/Classic Blending

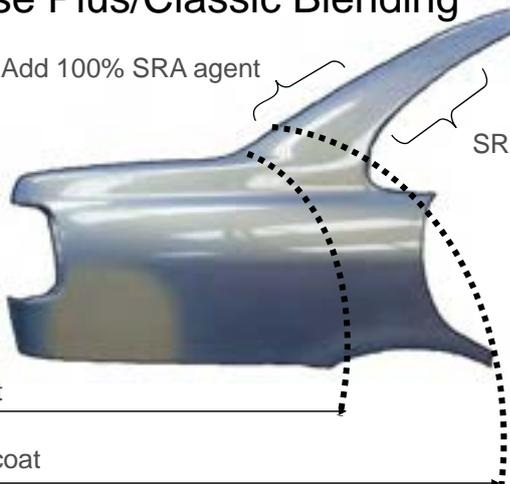
Clear coat

Add 100% SRA agent

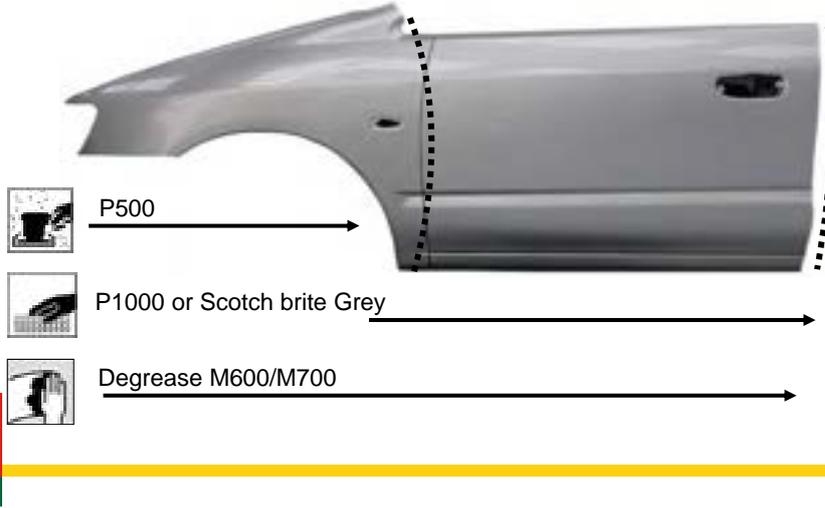
SRA agent

First coat

Second coat



## Autobase Plus/Classic 3 coat Blending



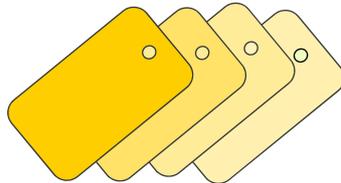
13

## Color check

Multiple number of layers creating the color effect

- 5 panels in the foundation coat
- Cover with 1-5 coats of the effect color

Always cover with a clearcoat

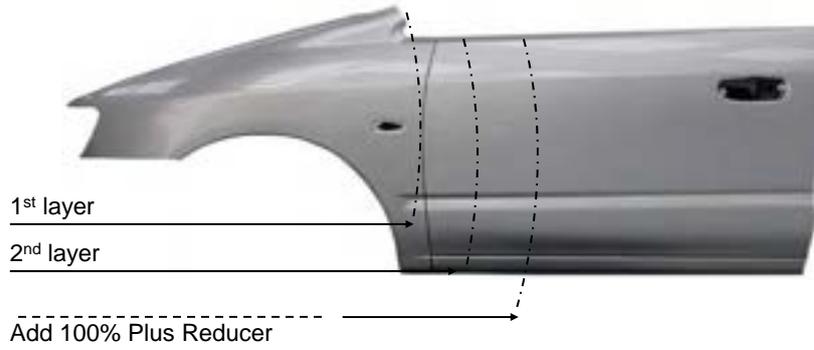


Select the closest matching panel

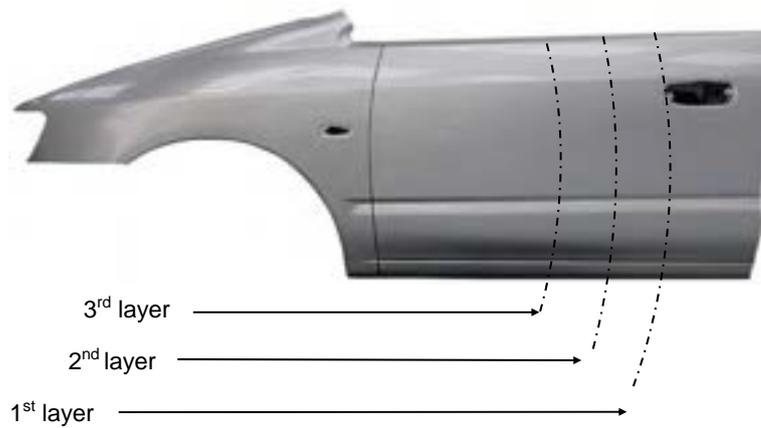


14

### Application foundation coat



### Application Pearl coat



# Clearcoat application





## Virgin thermoplastics preparation

See also TDS: S8.06.03a Plastic Parts Untreated Plastics/S8.06.03c Plastic Parts Information



20 minutes at 60°C.

- Heat up the virgin (untreated) plastic car part.
- Take care not to deform the shape of the plastic part.
- Release agent, penetrated in the virgin part, floats to the surface.



Thoroughly wash the surface with warm water and detergent.

- Rinse with sufficient clean water.
- Dry the surface.

Wash the virgin thermoplastic part while it is still warm.

- Release agents will migrate back into the thermoplastic if allowed to cool down before washing, where it becomes impossible to remove.



Abrade the surface using Plastic Prep in combination with warm water.

- Use the 3M AVFN (Purple) on hard thermoplastics.
- Use the 3M AUFN (Grey) on flexible/soft thermoplastics.



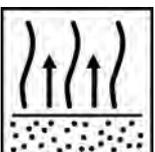
Rinse sufficiently with clean water after use.

- Make sure that difficult areas to access are sufficiently keyed i.e. grille and lamp orifices.



Thoroughly clean the surface by using:

- M700.
- Anti Static Degreaser.



15 minutes at 20°C.

- To allow any surface cleaner to evaporate from the virgin plastic surface.
- Optimum adhesion will be secured by coating the virgin plastic within 30 minutes.



Plastic adhesion primer application.

- Allow for sufficient flash-off time before applying the appropriate plastic primer.
- Solvents penetrated in the plastic part could cause delamination of the paint system.

## OEM pre-primed thermoplastics

See also TDS S8.06.03b Plastic Parts OE Pre-Primed Plastics



Thoroughly clean the surface by using:

- M700.
- Anti Static Degreaser.



P500

Abrade the OEM primer slightly by hand or abrading pad.



Thoroughly clean the surface by using:

- M700.
- Anti Static Degreaser.



Topcoat application

- See T.D.S. for detailed application and drying times.

## OEM sensitive pre-primed thermoplastics

See also TDS S8.06.03b Plastic Parts OE Pre-Primed Plastics



Gently though thoroughly clean the surface by using:

- Water and detergent.
- Waterborne surface cleaner.
- Solvent borne surface cleaner like M 700 would affect or dissolve the primer.



P500

Abrade the OEM primer slightly by hand or abrading pad.



Gently though thoroughly clean the surface by using:

- Water and detergent.
- Waterborne surface cleaner.
- Solvent borne surface cleaner like M 700 would affect or dissolve the primer.



Topcoat application

- See T.D.S. for detailed application and drying times.



Non-sanding (w-o-w) application; non sanding (w-o-w) surfacers contain a large amount of solvents in their mixture. The more solvent exposure the higher the risk that the sensitive OEM primer dissolves.

- Apply thin coats in case of a non-sanding surfacer application.



Plastoflex Primer can cause a sensitive OEM primer to dissolve.

- Only apply the adhesion primer when needed.

# New OE genuine plastic part

1.



## Heat up the plastic part: 20 minutes at 60°C.

- Take care not to deform the shape of the plastic part.
- Release agent, penetrated in the virgin part, floats to the surface.

2.



## Surface Cleaning

- Wash the surface with warm water and detergent.
- Rinse with sufficient clean water; dry the surface.

3.



## Abrading the surface

- Abrade with Plastic Prep, warm water and scuffing pad.
- Use 3M AUFN (Grey) or equivalent.

4.



## Surface Cleaning

- Clean the surface with M700.
- Wet the surface sufficiently with one cloth.
- Wipe it directly dry with another dry and clean cloth.

5.



## Flash-off 15 minutes at 20°C

- Allow M700 to evaporate sufficiently.

6.



## 1 coat Colorbuild Plus Non Sanding

Mixed with Colorbuild Plus Plastic Additive (>30°C)  
Mixed with Colorbuild Plus Plastic Additive HT (<30°C)

See TDS S2.02.02



See T.D.S. for more product details  
Always wear appropriate PPE

# New OE genuine plastic part

1.



**Heat up the plastic part: 20 minutes at 60°C.**

- Take care not to deform the shape of the plastic part.
- Release agent, penetrated in the virgin part, floats to the surface.

2.



**Surface Cleaning**

- Wash the surface with warm water and detergent.
- Rinse with sufficient clean water; dry the surface.

3.



**Abrading the surface**

- Abrade with Plastic Prep, warm water and scuffing pad.
- Use 3M AUFN (Grey) or equivalent.

4.



**Surface Cleaning**

- Clean the surface with M700.
- Wet the surface sufficiently with one cloth.
- Wipe it directly dry with another dry and clean cloth.

5.



**Flash-off 15 minutes at 20°C**

- Allow M700 to evaporate sufficiently.

6.



**1 coat  
1K All Plastics Primer application.**



See T.D.S. for more product details  
Always wear appropriate PPE

# Pre-primed genuine plastic

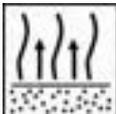
## OE primer check for correct preparation method:

- Solvent sensitivity check by M700
  - In case the OE primer does NOT dissolve; use method A.
  - In case the OE primer dissolves by M700; go for method B.

### Method A: M700

1.  **M700**  
Surface cleaning
2.  **P500**  
Sanding the surface
3.  **Scuff pad**  
Abrade all areas.
4.  **M700**  
Surface cleaning
5.  **15 minutes at 20°C**

### Method B: M200

1.  **M200**  
Surface cleaning
2.  **Fine scuff pad**  
Gently abrade all areas.  
\*Grey or copper scuff pad
3.  **M 200**  
Surface cleaning
4.  **15 minutes at 20°C**



See T.D.S. for more product details  
Always wear appropriate PPE

# Pressure drop

Hose inside diameter mm	Pressure, bar (psi)	Hose length 5m	Hose length 10m	Hose length 15m
6	4 (55)	1.0	1.6	2.2
	6 (85)	1.5	2.2	2.8
9	4 (55)	0.6	0.6	0.8
	6 (85)	0.6	0.8	1.1



diameter = 6 mm, length = 10 m: set pressure = 4 bar, at the gun = 2.4 bar  
 diameter = 9 mm, length = 10 m: set pressure = 4 bar, at the gun = 3.4 bar



# Infra red

## Radiation heat transfer factors

Power of the emitter (kW)

Dimensions of the surface to be heated (m<sup>2</sup>)

Efficiency of the emitter (eff)

type	wave-length	efficiency	temp.	filament protection
shortwave	1μ	84%	2300°C	inert gas, closed tube
mediumwave	1,5μ	80%	1200°C	open quartz glass tube
longwave	3μ	50%	650°C	none, ceramic tiles

$$\text{Energy density} = (\text{kW} \times \text{eff.})/\text{m}^2$$



brand	IRT
type	IRT-402XLNC
wavelength	short
efficiency (eff)	0,84
power (kW)	12
curing area (m <sup>2</sup> )	2,8
net radiation density (kWxeff/m <sup>2</sup> )	12x0,84=3,6 2,8



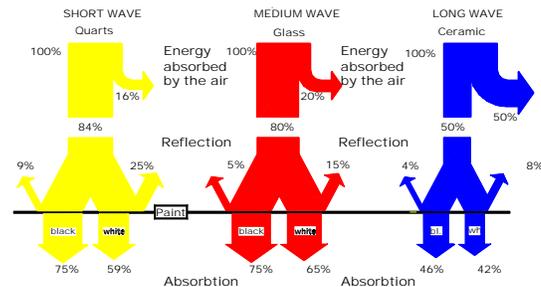
brand	Heraeus
type	infradry
wavelength	medium
efficiency (eff)	0,80
power (kW)	3
curing area (m <sup>2</sup> )	0,25
net radiation density (kWxeff/m <sup>2</sup> )	3x0,8=9,6 0,25



brand	TRISK
type	ETS 2
wavelength	short
efficiency (eff)	0,84
power (kW)	3
curing area (m <sup>2</sup> )	0,8
net radiation density (kWxeff/m <sup>2</sup> )	3x0,84=3,15 0,8



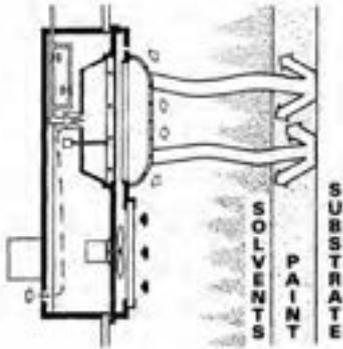
brand	TRISK
type	ETC3
wavelength	long
efficiency (eff)	0.50
power (kW)	4
curing area (m <sup>2</sup> )	0,8m <sup>2</sup>
net radiation density (kWxeff/m <sup>2</sup> )	4x0,5=2,5 0,8



## Functioning of Infra Red curing equipment

Curing with infra red will speed up the drying process, shortening the total repair process significantly. Manufactures build various types of IR equipment; from long to medium and short wave units. The shorter the IR wave the more energy can be radiated to the surface to cure; shorter IR waves, faster curing.

### Infra Red working principle:



The energy from the IR unit will heat all the way down to the substrate surface. Once the IR radiation reaches the substrate surface the energy will be reflected back into the paint film forcing the solvents to evaporate.

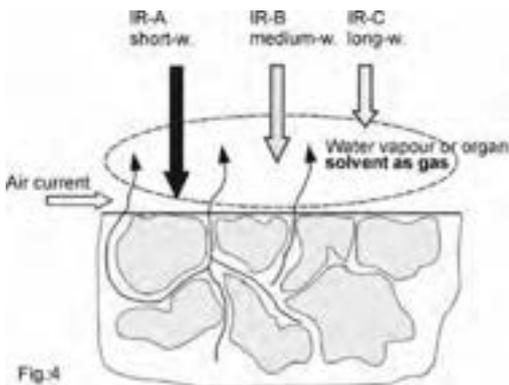
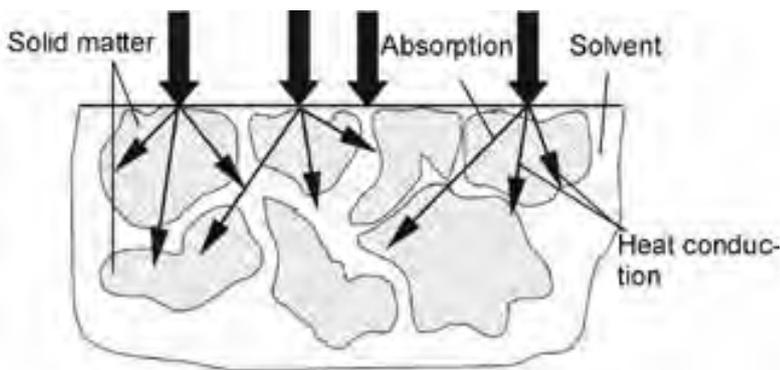


Fig-4

IR radiation penetrates down to the surface substrate heating up all solid matter along the way.

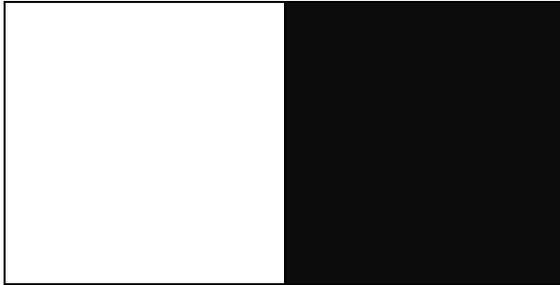
Long wave IR units will give less output then the short wave units indicated by the different arrows, this relates also to the drying speed.



IR radiation heats up solid matter.

Generated heat is than transferred; evaporating solvents.

## IR Drying, points of attention



Lighter colors

- Reflecting energy
- Less heat, slower curing

Darker colors

- Absorbing energy
- More heat, faster curing
- Darker colors show approximately a 20°C higher surface temperature.

### Points to consider when curing with Infra Red:

- When it is decided to cure with infra red make sure to cure all previous applied products in the repair system with IR.
- When i.e. curing only the topcoat with IR the applied polyester bodyfiller and primer surfacer will get also radiated and could cause shrinking of the applied paint system when those products where not fully cured; for instance when previous cured overnight.
- Temperature should not exceed 90°C (too high temperature could cause irreversible substrate deformation (especially with thermoplastics) or delamination.



Polyester bodyfiller:

- Cure the polyester only at low power.



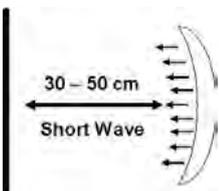
Primer Surfacer:

- Allow a minimum of 5 minutes product flash-off time before IR curing.
- Cure first at low power followed by curing at high power.



Topcoat:

- Allow a minimum of 5 minutes product flash-off time before IR curing.
- Cure first at low power followed by curing at high power.

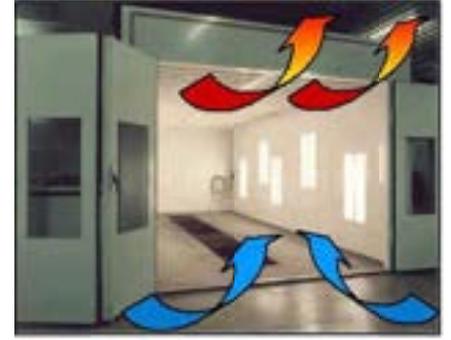


Respect the recommended distance between object and unit.

Avoid too much heat build-up; this could cause solvent popping, delamination or even deformation of the metal or plastic substrate.



## Spraybooth



- Keep the spraybooth clean; free from obstacles during application.
- Keep the fans running when opening the spraybooth doors; overpressure keeps dust out.
- Allow the spraybooth to cool down after the drying cycle; hot air will leave the spraybooth, cooler air, including dust, will enter the spraybooth.

Slight overpressure will avoid dust to enter the spraybooth.  
 UK legislation prescribes a balanced air level (0).



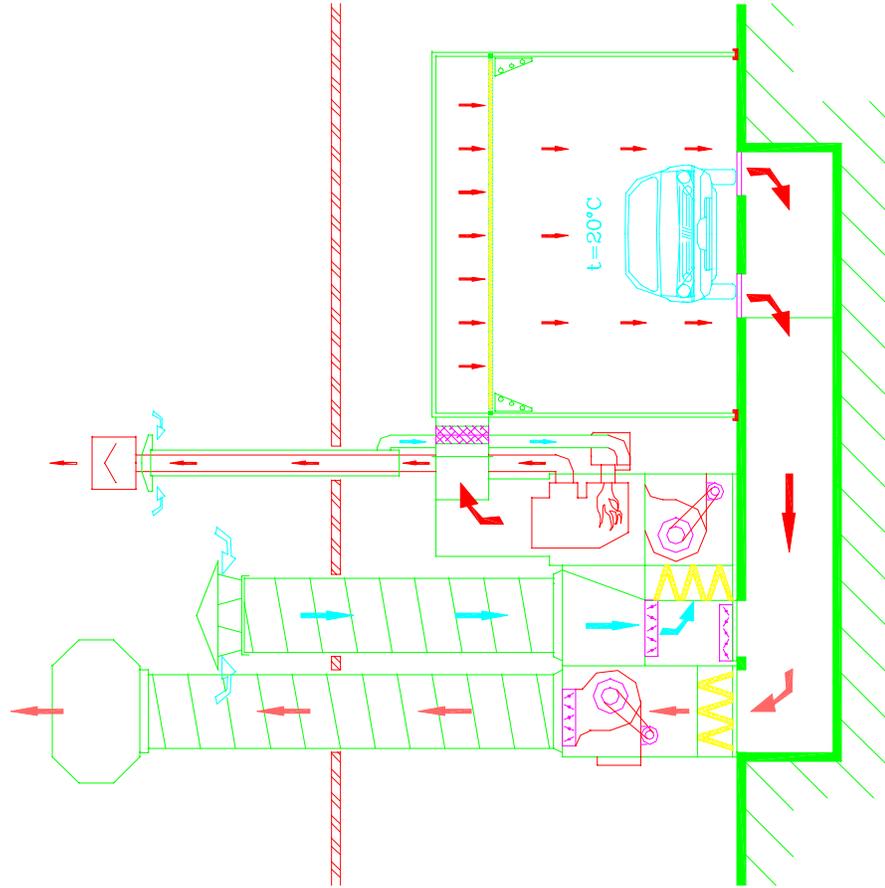
- Over pressure; spray-fumes are pressed into the workshop.
- Under pressure; dust is extracted into the spraybooth.

Spraybooth filters are to be replaced according a maintenance schedule.  
 Different filters, different replacement frequencies. Replacement frequency is strongly influenced by the number of paint jobs. Filter replacement indication;

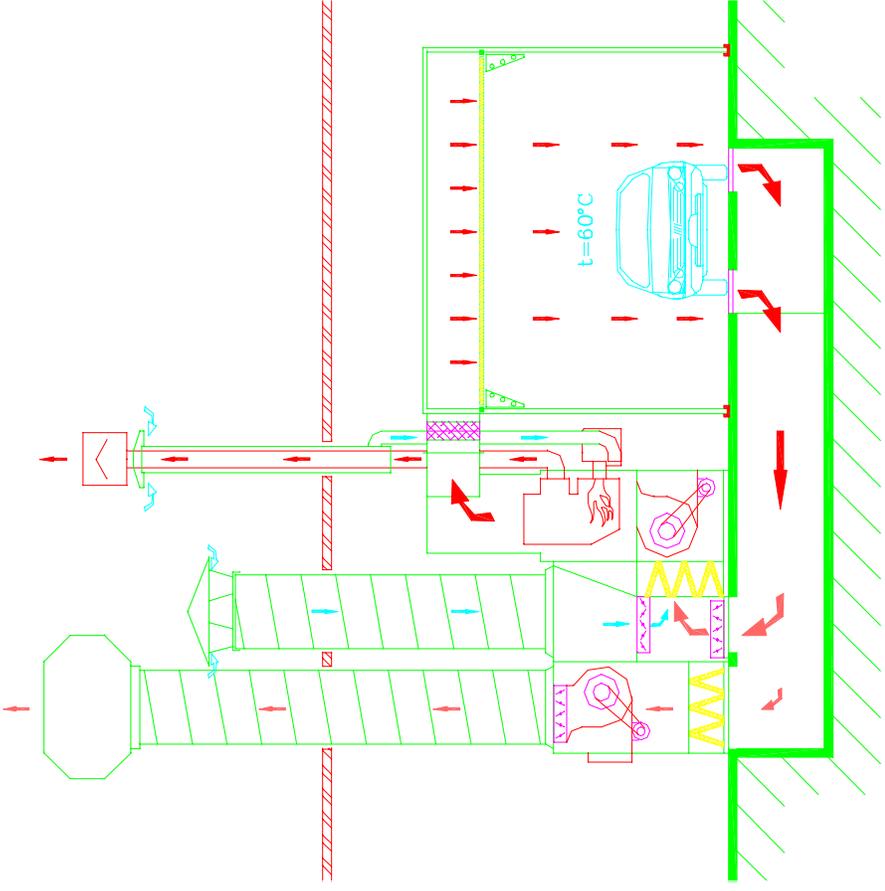


Pre-filter	each 4-6 months
Ceiling filter	once or twice a year
Paint-stop floor filter	each 2-3-4 weeks
After filter	each 4-6 months

# Booth air flow



airflow during spraying (ventilation)



airflow during drying (circulation)

# Product Curing

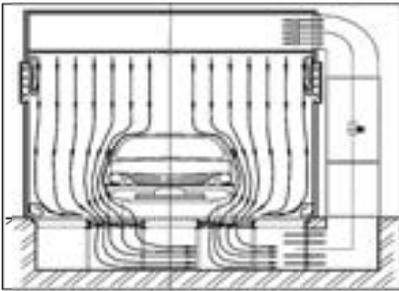
Minimum temperature for optimum curing: 20°C

- Higher temperature; faster curing.
- Lower temperatures; slower curing.

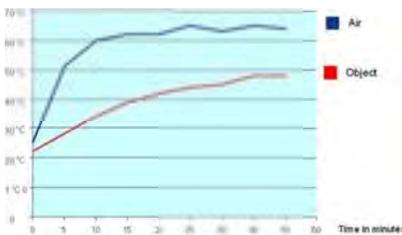
Lower drying temperatures; increased risk for:

- Poor sanding
- Gloss dieback
- Contour mapping
- Sanding marks

Heat transfer by convection; the air is heated up by a burner and then transported, circulated, inside the spraybooth.



The heat source has no direct contact with the object.

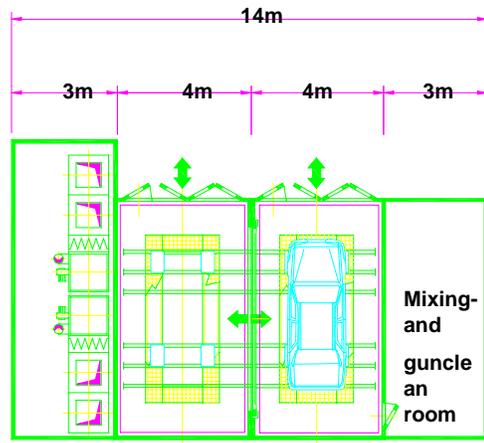
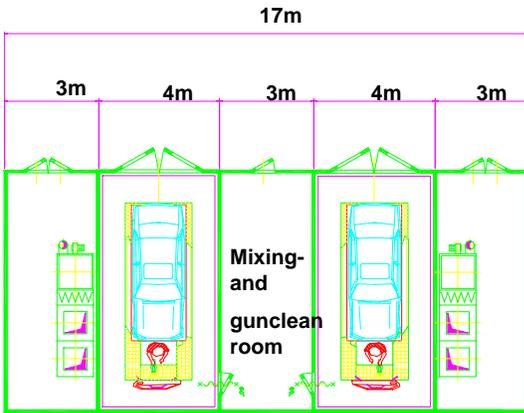
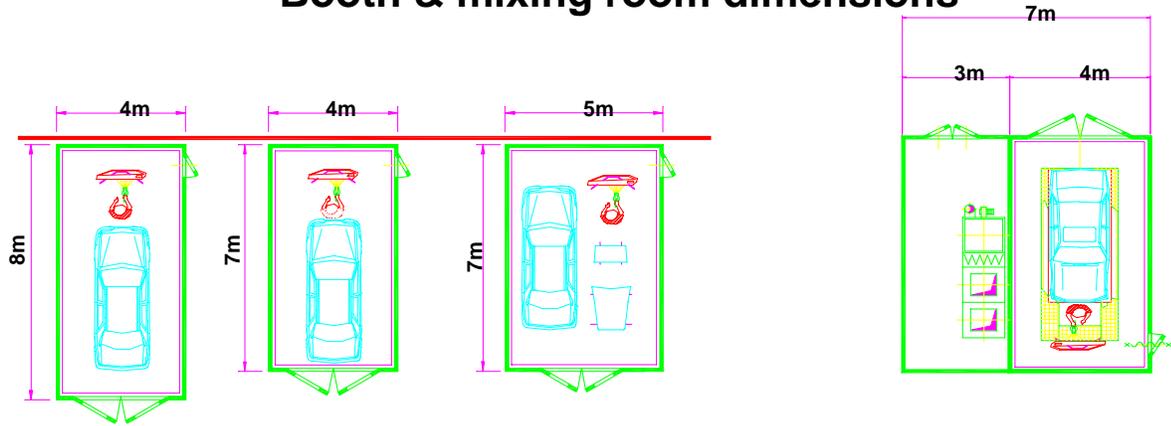


During the drying cycle the air temperature inside the spraybooth rises quicker than the object temperature.

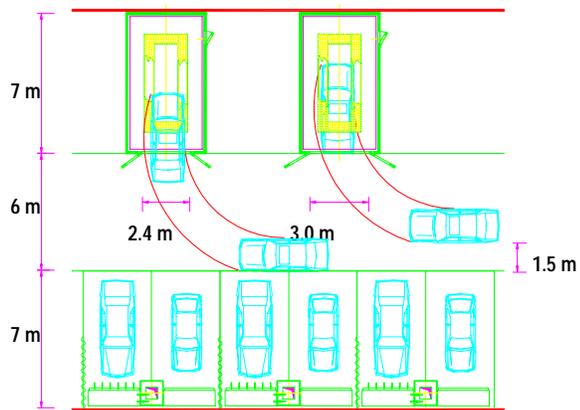
Temperature difference can create problems (winter period) when the car body is low in temperature, a too low object temperature demands longer drying times.

If neglected this can result in poor through hardening of the paint, higher risk for dieback and poor polishability.

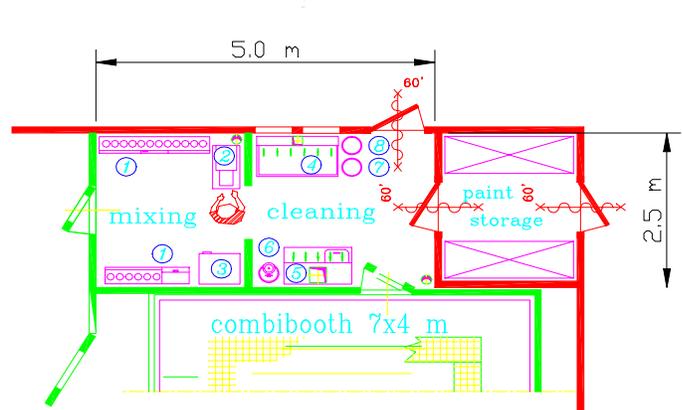
# Booth & mixing room dimensions



## Booth construction; width of the main door



## Example mixing room



## Compressed Air



Compressors are available in piston and screw. Important is a yearly maintenance check by the supplier. Equipment failure and risk for air contamination will be reduced. A (weekly) maintenance by the painter is important to execute:

- Condense extraction from the air receiver (air tank)
- Oil level check
- Air inlet filter check




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Check the final air-filters in the spraybooth according indicated maintenance schedule

Check with the air-filter supplier maintenance or replacement recommendations




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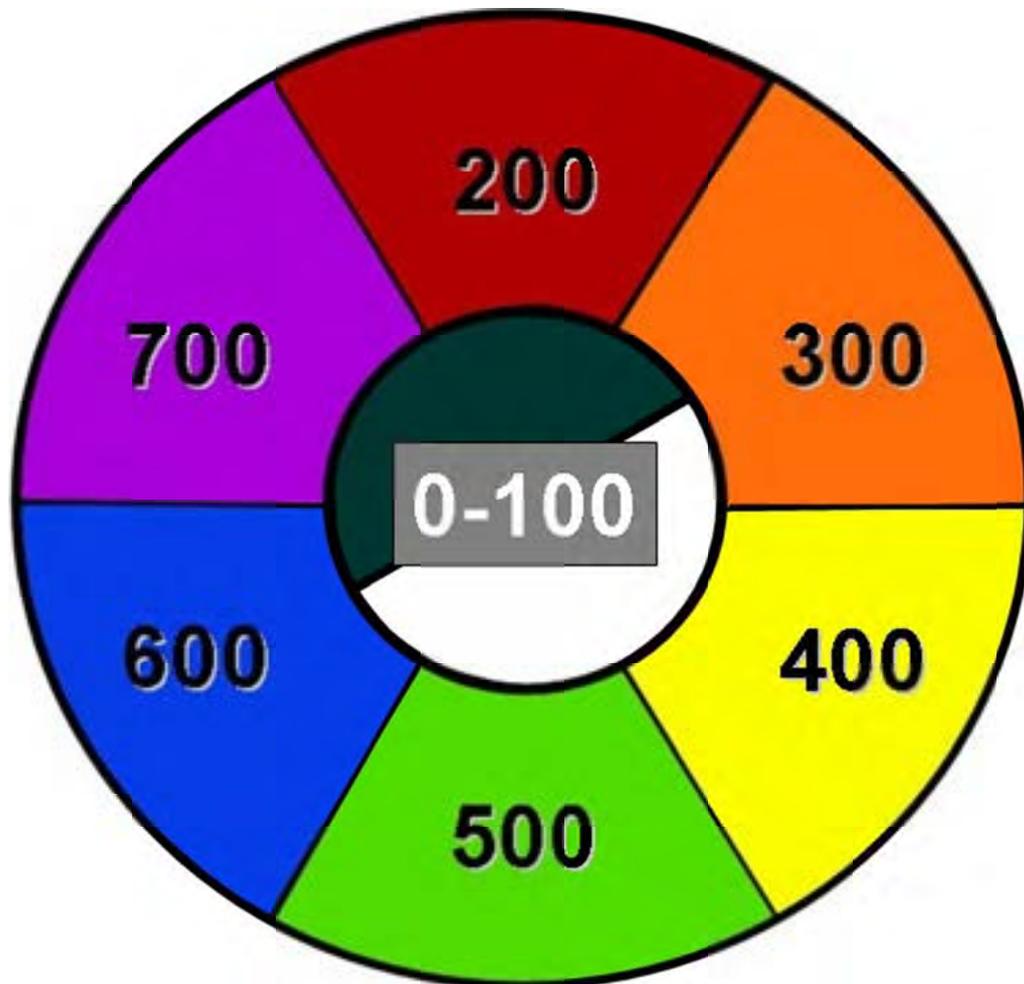
Air hoses come in different sizes and qualities, a minimum air hose diameter of 9mm is recommended. A narrower diameter will restrain the air volume to pass, causing pressure drop.

### Spraybooth air hose:

- Air-hose preferably with anti static properties.  
Copper wiring in the hose will guide static charge from connector to spraybooth wall down to the ground.
- Temperature fluctuations will dry out the air hose and makes it brittle.  
If this process is at an advanced stage, small particles on the inside can loosen and transported by the air end up in the paint during application. Replace the air hose when it shows signs of drying out.
- Low qualities air-hoses have some lubrication on the inner side; check this with a white clean cloth or a mirror in front of the air hose, transporting air
- New air-hoses show some chalking powder on the inner side to avoid contamination before installation. Let sufficient air pass through the air hose, removing this powder, before use



## Color Code explanation



### 0-99 Binders

- 065

### 100 Black/White

- Called center colors

200 Red

300 Orange

400 Yellow

500 Green

600 Blue

700 Violet

### Color code; R275

#### R; Product indication

- R=Autocryl Plus LV
- A=Autocryl Plus

**2;** Color Group (Red)

**7;** Color direction (Violet)

**5;** Random number

- Color circle position

## Color Code explanation

### Solid MM color code



#### Color code; Q275

- R;** Product indication
- Q= Autobase Plus
  - Z= Autobase Classic
- 2;** Color Group (Red)
- 7;** Color direction (Violet)
- 5;** Random number
- Color circle position

*No color group segments in Autowave.*

### Autobase Plus Metallic/Pearl MM color code

#### MM Color code; Q811M

- Q;** Product indication
- Q=Autobase Plus
  - Z=Autobase Classic
- 8;** Color Group; Metallic
- 1;** Color direction; Neutral
- 1;** Flip tone; Neutral
- Color direction under different angle
- M;** Coarseness Metallic

#### MM Color code; Q943M

- Q;** Product indication
- Q=Autobase Plus
  - Z=Autobase Classic
- 9;** Color Group; Pearl
- 4;** Color direction; Yellow
- 3;** Flip tone; Orange
- Color direction under different angle
- M;** Coarseness Pearl

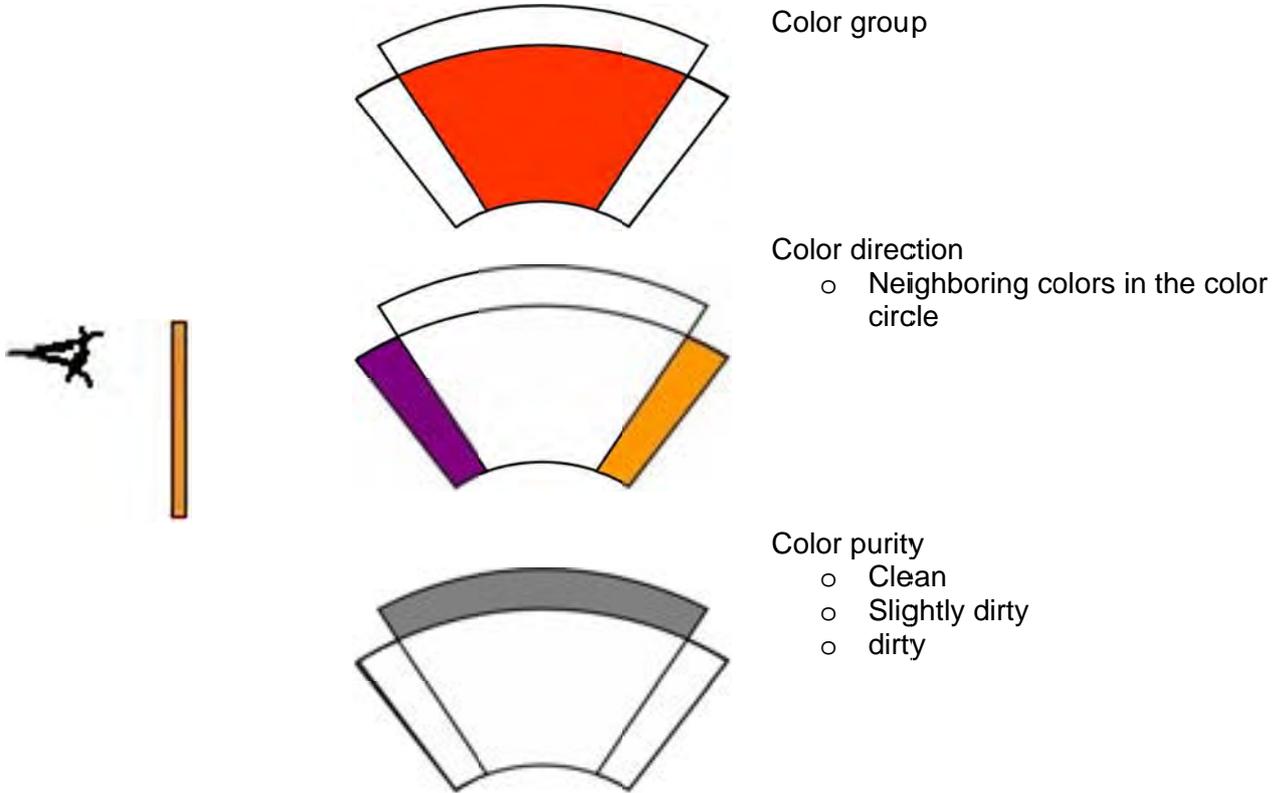
### Coarseness Autobase Plus Metallic

MM color	Coarseness Fine	Purity Dirty	Flip-tone Light
Q811 B	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
Q811 E			
Q811 J			
Q811 M			
Q811 P			
Q811 R			
Q811 U			
Q833 G			
Q843 H			
	Coarse	Clean	Dark

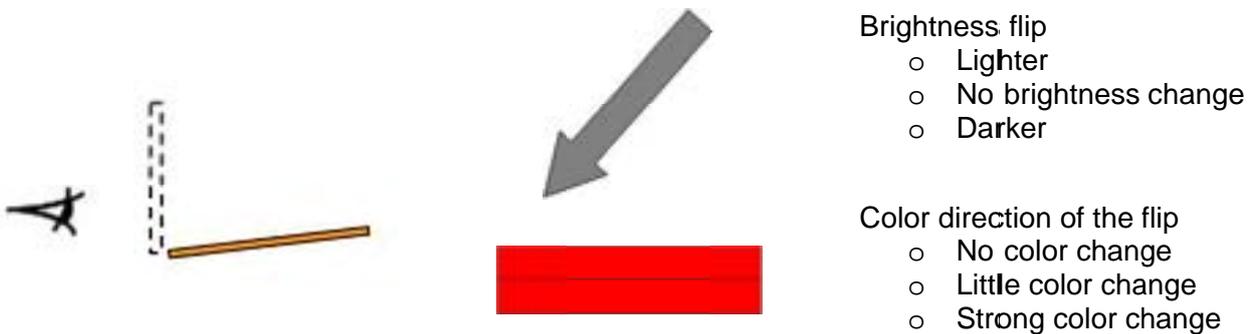
Coarseness indication Metallic and Pearls; A= Fine      Z= Coarse

## Color Symbol Solid/Metallic/Pearls

Face tone; color check at approximately 90° angle



Flip tone; color check at largest possible angle; 45° and more



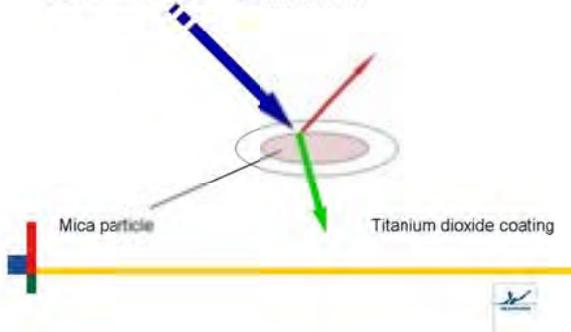
# Pearl (mica) effect

## Pearl (mica) effect

sikkens

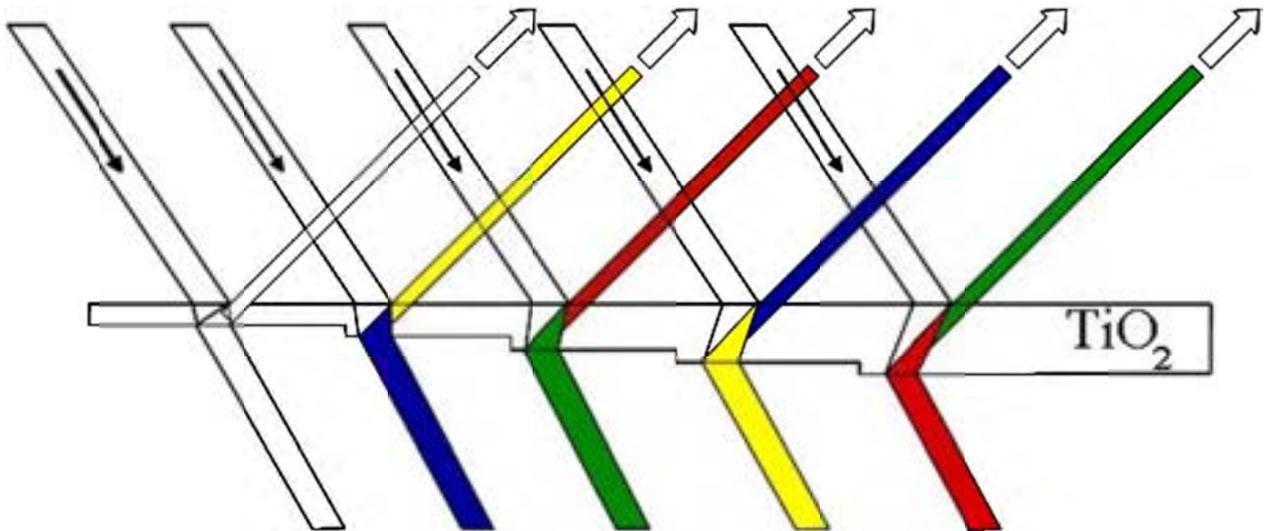
Pearl/mica pigment

Light refraction by titanium dioxide coating



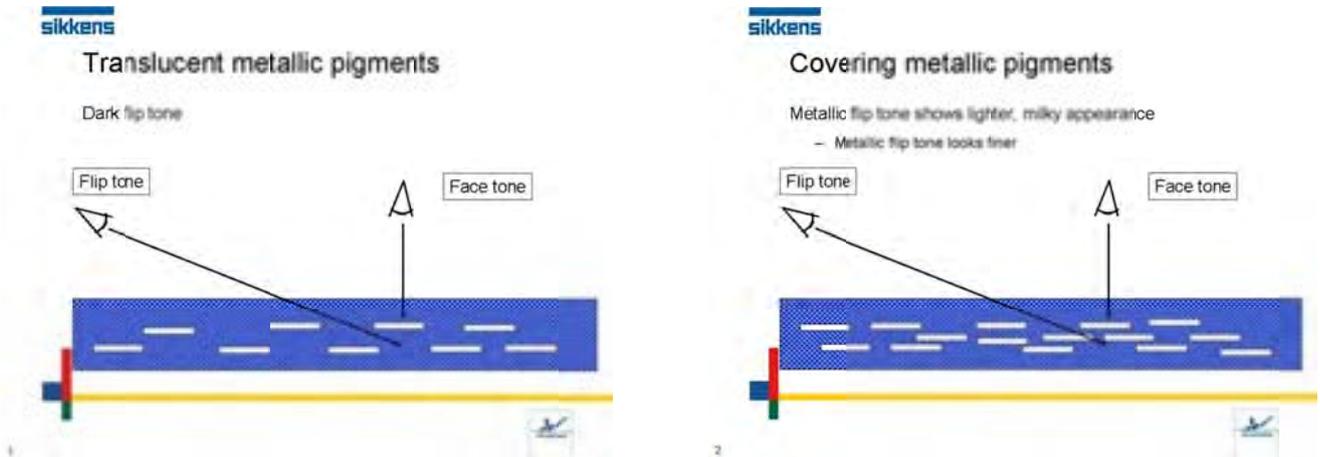
Translucent mica particles covered in a transparent titanium dioxide coating.

White light strikes the mica pigment, titanium dioxide coating, will 'refract' (break) the light.



Titanium dioxide coating layer thickness determines the visualized colors. Iron Oxide or Copper Oxide particles as pigment, covered by titanium dioxide create a different color aspect.

## Translucent and covering pigments



Color strength of a pearl MM toner:

- The darker the color from mixed from a formula, the stronger the color effect of the added pearl MM toner.
- Addition of any pearl MM toners makes the color cleaner.
- The change in the color flop is limited visible.
- A large quantity of a pearl MM toner is needed to change the color.
- The color flop stays dark after adding any pearl MM toner.

## MM toner effect

Effects created by MM toners.  
Not frequently used for tinting purpose.

MM toner	Face tone	Flip tone	Remarks
Q 110 Q 120	Darker/Dirty	Much lighter Finer coarseness	Covering pigment
Q195	Yellow/Dirty	Lighter Bluer	Transparent white
Q190 Q191	Darker/Dirty Coarser	Lighter Coarser	<i>Max. 25% in formula</i>

00/098-Q110	Darker and dirty face tone, metallic appears finer.		
777-Q190	Darker and dirty face tone, lighter flip tone though the metallic appears coarser.		
Q191	<i>Higher concentrated than the Q190.</i>		
101-Q195	Yellow face tone, lighter flip tone with bluish color effect.		



# Problem Prevention





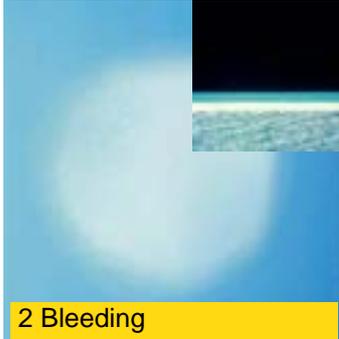
MATRIX	Errors related to the repair process						
	System Selection	Degreasing	Sanding	Filling with a bodyfiller	Hardeners, Thinners and Additives	Spraying	Functioning of equipment
1 Poor adhesion	X	X	X	X	X	X	
2 Bleeding		X		X	X		
3 Blistering		X	X		X	X	X
4 Blushing & Blooming					X	X	
5 Bodying							X
6 Chalking					X		
7 Hairline cracks		X			X	X	
8 Chipping	X	X				X	
9 Cloudiness						X	X
10 Craters		X				X	X
11 Contour mapping	X	X	X	X		X	
12 Color difference					X	X	X
13 Poor through hardening		X		X	X	X	X
14 Overspray					X	X	
15 Dust inclusion						X	X
16 Floatation					X	X	
17 Low gloss		X	X		X	X	X
18 Poor covering					X	X	
19 Lifting	X					X	
20 Orange peel					X	X	
21 Pinholes				X	X	X	
22 Rust		X	X		X	X	
23 Runs		X			X	X	
24 Sanding marks			X			X	
25 Settlement							X
26 Solvent pops					X	X	X
27 Water marks					X	X	
28 Wrinkling					X	X	
29 Peeling					X	X	



# Problem Prevention Errors 1 - 16



1 Poor adhesion



2 Bleeding



3 Blistering



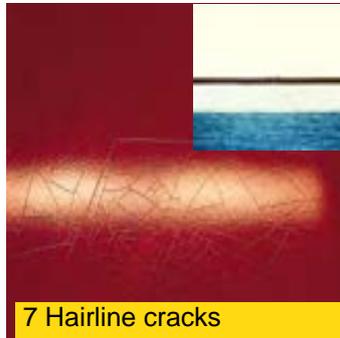
4 Blushing & Blooming



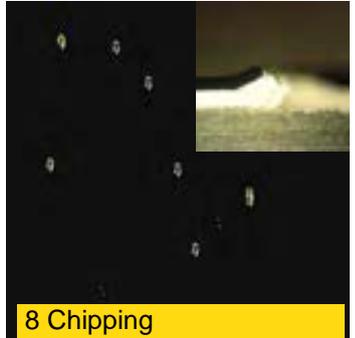
5 Bodying



6 Chalking



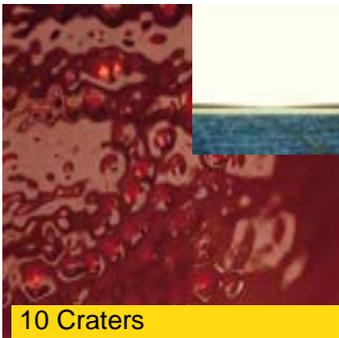
7 Hairline cracks



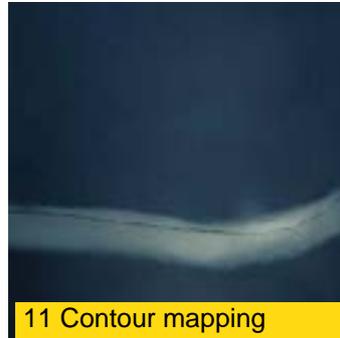
8 Chipping



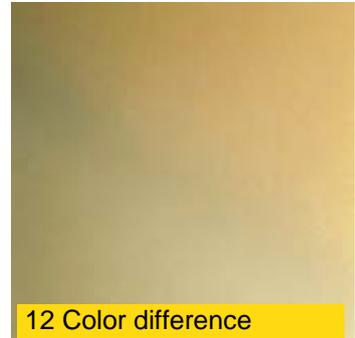
9 Cloudiness



10 Craters



11 Contour mapping



12 Color difference



13 Poor throughhardening



14 Overspray



15 Dust inclusion



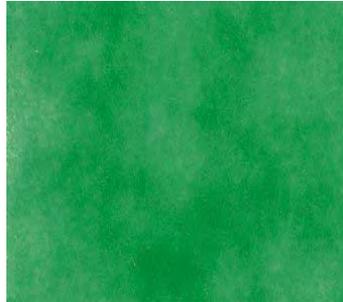
16 Floatation



# Problem Prevention Errors 16 - 29



17 Low gloss



18 Poor covering



19 Lifting



20 Orange peel



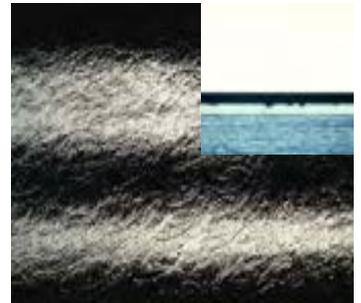
21 Pinholing



22 Rust



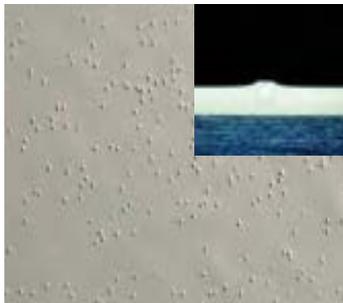
23 Runs



24 Sanding marks



25 Settlement



26 Solvent pops



27 Water marks



28 Wrinkling



29 Peeling



Description	1	Poor Adhesion
<p>Poor adhesion may show immediately after application and drying or will be visual after some weeks or months.</p>		

	Causes	Prevention
	Polyester body filler applied over Wash Primer CR.	Apply Polyester body filler <u>only</u> over bare metal or over Primer Surfacer EP.
	No recommended primer applied.	Apply recommended primer (for aluminum, plastic, galvanized steel) when needed.
	Wrong selection of the body filler, incompatible for the substrate.	Select the correct body filler related to the substrate.
	Using wrong, not qualified degreasers, contamination not properly removed.	Use recommended degreasers only (compatible product for substrate).
	Using dirty cloths, contamination wiped on the surface.	Use two clean cloths, one to dissolve the contamination, one to remove.
	Incorrect degreasing technique.	Use two clean clothes, and degrease small parts at a time. Wipe off before the degreaser evaporates.
	No degreasing at all.	Wash with (preferably warm) water and soap and then degrease with recommended degreaser.
	Insufficient or incorrect sanding grit and materials, too fine sanding grit selection enhances the risk of adhesion problems.	Sand the repair and feather edge with recommended sanding grit and with standardized sanding paper.
	Using incompatible polyester for the substrate(system selection).	Use recommended products suitable for the substrate (system selection).
	Incorrect mixing. Not 100% mixing of the polyester with the peroxide hardener.	Mix according to recommendation. Do not stir when mixing, to avoid air inclusion in the mixture.
	Wrong Hardener selected.	Use recommended dedicated products only.

	1	<b>Poor Adhesion</b>
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	<b>Causes</b>	<b>Prevention</b>
	<p>Too fast Reducer selected (Poor flow, too much over-spray, condensation formation in humid conditions).</p>	<p>Select the Reducer related too ambient temperature, repair size and air flow.</p>
	<p>Wrong application technique: Too coarse application causes too much over-spray. Too short flash off times between application layers.</p>	<p>Follow recommended application technique; Apply normal coats, with the right pressure. Remove over-spray between the layers with a tack rag Stick to the recommended flash off times between application layers.</p>

**Remedy**

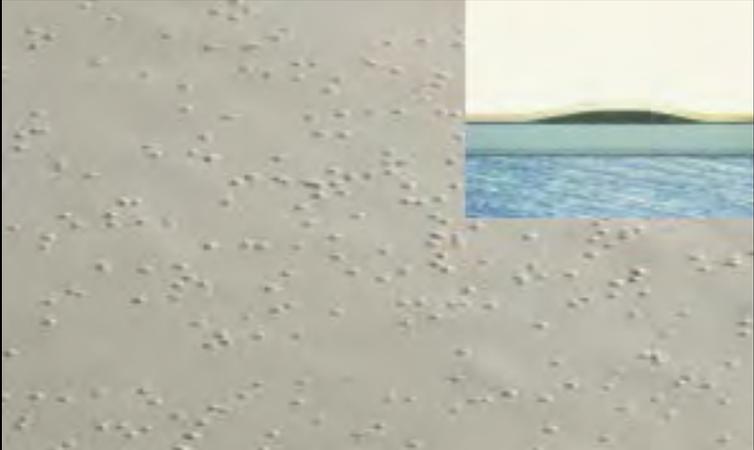
Remove total system to sound layer. If necessary remove applied system in total and start preparation and application according recommendation.



Description		2	Bleeding
<p>Fresh applied topcoat shows local discoloration.            Pigment substances shows through the fresh finish.            Although bleeding is predominantly an application defect, it can also occur on a time scale of weeks to months after application.            Clearly, the visual severity of bleeding is greatest, when lighter colors are applied.</p>			
<b>Causes</b>		<b>Prevention</b>	
	<p>Tar spots not removed.            Non re-spray able body -coating not removed thoroughly.</p>	<p>Remove all kind of contamination thoroughly.            Remove non re-spray able body -coating thoroughly.</p>	
	<p>Too much peroxide hardener added to polyester body filler.            Hardener and polyester product not thoroughly mixed.</p>	<p>Use the correct mixing ratio, if necessary use a weighing scale or mix with dispenser.            Mix the two products in the correct way into a homogeneous mass.            Avoid colored lines in the mixture when applying.</p>	

### Remedy

Remove the paint system back to and including the bleeding layer and build up the system once more.  
 Alternative solution: sand (visual) repair spot with P500 dry, apply a fine silver metallic till opacity is reached and Re-spray topcoat system.  
 When the amount of peroxide is really overdone, even the Primer Surfacer EP will not block the peroxide in migrating to the surface.

<b>Description</b>	3	Blistering
<p>Small pimples will be displayed at the surface. Blistering is caused by moisture or contamination under the paint which forces the paint system up.</p> <p>This normally occurs after a longer time period.</p>		

**Causes**

**Prevention**

	<p>Application of a base coat (Solvent, or waterborne) over Wash Primer CR (etch primer).</p>	Always apply a base coat on top of a suitable substrate (primer / filler).
	<p>Application of Primer Surfacer EP over Wash Primer CR.</p>	<p>Never apply Epoxy Primer on top of an etching primer. Etching primer on top of Epoxy Primer (dried and sanded) is possible.</p>
	<p>Application of Polyester body fillers over Washprimer CR.</p>	Apply polyester body fillers only over bare metal or on sanded Primer Surfacer EP.
	<p>Contamination was left on the substrate.</p>	Always degrease properly with every step in the process.
	<p>Contamination caused by hands. One of the most under-estimated risks during the repair process is finger or hand prints on the surface of the car. Because of perspiration, hands are covered with salt that will stick on the surface.</p>	Do not touch ready to spray panels with bare hand; this kind of contamination can only be removed by cleaning with water and soap, or using water born degreaser.
	<p>Wet sanding of the polyester body filler. Absorption of the water into the polyester product.</p>	<u>Never</u> sand polyester body filler with water.
	<p>Chalk and salt deposits from the “contaminated” sanding water remained on the substrate, absorbing moisture, which will be trapped in a new paint film.</p>	Rinse thoroughly with clean water after sanding and dry the object completely.

	3	Blistering
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	Causes	Prevention
	Wet sanding of the polyester body filler. Absorption of the water into the polyester product.	Never <b>wet sand</b> polyester body filler with water.
	Contamination inside the polyester body filler.	Close the can of the body filler to avoid contamination which can result in blisters.
	Wrong Hardener selected, no or insufficient chemical reaction.	Mix products only with recommended hardeners.
	Humidity reacted with Hardener; product is broken, no more chemical reaction possible.	Always close the lid of the Hardener can, as on all other products.
	Incorrect mixing ratio, no, or no optimal cross-linking of the components.	Always mix the components according to the recommended mixing ratio.
	Storage situation of the products is too cold or humidity conditions are too high. Product attracts moisture.	Try to keep the storage temperature at, $\pm 20^{\circ}\text{C}$ . without too many temperature fluctuations.
	Condensation in the air tank and air cooler is not tapped regularly.	Remove the condensation water from the tank and cooling system at least on a weakly basis. Check more frequently when working in conditions with a higher humidity level.
	Poor maintenance. Air filter system saturated with moisture.	Maintain the air filter systems regularly, check twice a year.

### Remedy

Remove the blisters completely to a sound layer. In most cases this means that you have to sand to bare metal and start applying a complete new paint system.

<b>Description</b>	<b>4</b>	<b>Blushing &amp; Blooming</b>
<p>The freshly applied paint appears to be milky.</p>		

**Causes**

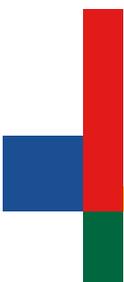
**Prevention**

	<p>The use of a too fast reducer will cool down the surface very quickly. In humid conditions the moisture from the air will be attracted and will condense on the surface of the wet paint film.</p>	<p>Select a Reducer related to temperature, job size and air flow.</p>
	<p>Too cold storage temperature, temperature differences attracts humidity during application.</p>	<p>Let the paint acclimatize to ambient temperature.</p>

**Remedy**

Place the car back inside the spray-booth, dry again for 15 / 30 minutes at 60°C.  
Placing the car in the sunlight can give the same result.

- If defect does not disappear, sand the topcoat and re-apply top coat system.  
If defect re-appears, remove topcoat by sanding and re-apply the total paint system.



<b>Description</b>	<b>5</b>	<b>Bodying</b>
<p>If paint bodies, gelatin or thickens, it is often the result of solvent evaporation.</p> <p>1K products are particularly susceptible to this.</p>		

**Causes**

**Prevention**

	Stored at too high temperatures.	Ideal storage temperature is $\pm 20^{\circ}\text{C}$ .
	Lid on the paint can is not closed properly.	Close tins directly after use.
	Mixing toners on the mixing machine are being over stirred.	With the exception of water born product, stir twice a day for 15 minutes.
	The stirring lids are not closed properly.	Clean the stirring lid before putting on a new tin. Check if it seals properly.

**Remedy**

Bodied paint, primers and fillers are no longer suitable for usage and must be replaced with new ones.

<b>Description</b>	6	Chalking
<p>During exposure to UV radiation of sunlight, resins of the paint film get chalked. A powdery layer appears on the paint film resulting in (complete) discoloration.</p>		

<b>Causes</b>		<b>Prevention</b>
	Wrong quantity of Hardener, result in insufficient cross linking.	Mix according to the recommended mixing ratio, use the correct quantity of Hardener.
	Wrong type Hardener selected, result in no, or an insufficient cross-linking. The paint will be more sensitive to UV radiation.	Mix only with recommended Hardeners, as mentioned in the Technical Data Sheets.

**Remedy**  
 Slight chalking can be removed by polishing, and color can be protected with wax.  
 If chalking process repeats rapidly, sand topcoat and re-spray.  
 Strong chalking; sand topcoat and re-spray.



<b>Description</b>	<b>7</b>	<b>Hairline Cracks</b>
<p>After some time a widespread pattern of fine hairline cracks appear in the paint surface.</p> <p>Cracks can go straight through all paint layers.</p>		

<b>Causes</b>		<b>Prevention</b>
	<p>Wrong mixing ratio. Too much Hardener in 2 - K product. Too much Reducer in 1 - K product.</p>	<p>Mixing ratio of the product according Technical Data Sheet. Use mixing stick.</p>
	<p>Wrong Hardener / Reducer selected. Incompatibility of the different products.</p>	<p>Select only recommended products, see Technical Data Sheet.</p>

**Remedy**  
The only proper solution is to remove the cracked paint film completely to sound layer and re-paint.

<b>Description</b>	<b>8</b>	<b>Chipping</b>
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A small piece of the finish or even the total system seems to have broken away from the substrate.  
 Sometimes the underlying filler coat has broken as well.  
 This problem usually caused by stone chips.



	<b>Causes</b>	<b>Prevention</b>
	Polyester body filler applied over Wash Primer CR.	Apply Polyester body filler <u>only</u> over bare metal or over Primer Surfacer EP.
	No recommended primer applied.	Apply recommended primer (for aluminum, plastic, galvanized steel) when needed.
	Wrong selection of the body filler, incompatible for the substrate.	Select the correct body filler related to the substrate.
	Using wrong, not qualified degreasers, contamination not properly removed.	Use recommended degreasers only (compatible product for substrate).
	Using dirty cloths, contamination wiped on the surface.	Use two clean cloths, one to dissolve the contamination, one to remove.
	Incorrect degreasing technique.	Use two clean clothes, and degrease small parts at a time. Wipe off before the degreaser evaporates.
	No degreasing at all.	Wash with (preferably warm) water and soap and then degrease with recommended degreaser.
	Insufficient or incorrect sanding grit and materials, too fine sanding grit selection enhances the risk of adhesion problems.	Sand the repair and feather edge with recommended sanding grit and with standardized sanding paper.
	Using incompatible polyester for the substrate (system selection).	Use recommended products suitable for the substrate (system selection).
	Incorrect mixing. Not 100% mixing of the polyester with the peroxide hardener.	Mix according to recommendation. Do not stir when mixing, to avoid air inclusion in the mixture.



	8	Chipping
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	Causes	Prevention
	Wrong Hardener selected. Too fast Reducer selected (Poor flow, too much over-spray, condensation formation in humid conditions).	Use recommended dedicated products only. Select the Reducer related too ambient temperature, repair size and air flow.
	Wrong application technique: Too coarse application causes too much over-spray. Too short flash off times between application layers.	Follow recommended application technique; Apply normal coats, with the right pressure. Remove over-spray between the layers with a tack rag Stick to the recommended flash off times between application layers.
	Excessive paint film thickness, application of filler / topcoat is too heavy.	Avoid application of thick paint layers; apply according to recommended spraying technique.

**Remedy**

Even small chips if neglected, can become a foothold for corrosion to start. Touching with a small brush and paint should be carried out as soon as possible after the damage occurs to avoid rust and minimize the risk of further paint coming loose.  
More extensive damage will require preparation and re-painting.



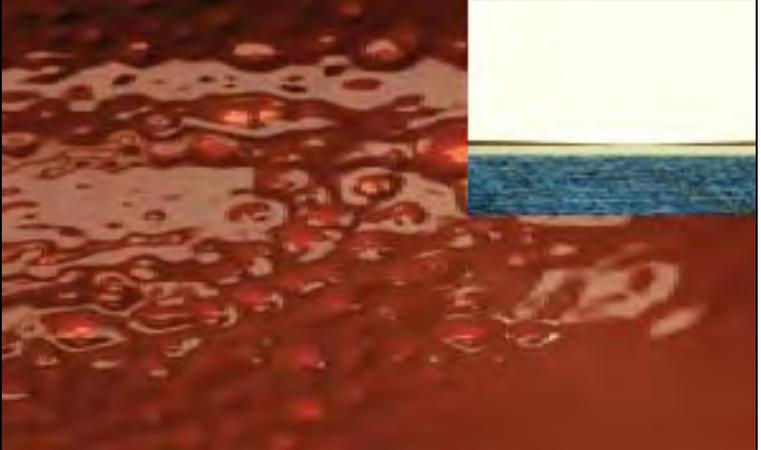
<b>Description</b>	<b>9</b>	<b>Cloudiness</b>
<p>Cloudiness appears in metallic base-coats only. The disorientation of aluminum pigments in the base-coat are causing a visible disturbance in the color appearance, known as cloudiness or mottling effect.</p>		

<b>Causes</b>		<b>Prevention</b>
	Too fast Reducer selected so too fast evaporation of the Reducer.	Select the correct Reducer related to temperature, size of the repair and air flow.
	Incompatible Reducer not qualified for the product selected.	Only select the recommended Reducers for the product, according to Technical Data Sheet.
	Application of the base coat is too heavy and the metallic gets disorientated.	Apply according to recommended spraying technique.
	Wrong spray gun set up, incorrect air-pressure and / or spray gun distance.	Check spray gun set up and apply according to recommended spraying technique.

**Remedy**

When re-applying the base coat, apply according to recommendation.  
When clear coat was sprayed: sand after drying with P500 dry or P1000 wet and re-spray according to recommendation.



<b>Description</b>	<b>10</b>	<b>Craters</b>
<p>Surface is dotted with small local holes. Paint film is surrounding contamination spots, sometimes visualizing the surface. Surface contaminants may be</p> <ul style="list-style-type: none"> <li>• Grease</li> <li>• Wax</li> <li>• Polishing agent</li> <li>• Dirt etc.</li> </ul> <p>Especially contamination from silicone compounds often causes problems.</p>		

**Causes**

**Prevention**

	Using unqualified degreasers, contamination not properly removed.	Use recommended degreasers only.
	Using dirty cloths, contamination wiped on the surface.	Use two clean cloths, one to dissolve the contamination, one to remove.
	Incorrect degreasing technique.	Use two clean clothes, and degrease small parts at a time. Wipe off before evaporation.
	As an <u>additive</u> , we can add <u>anti-silicon</u> to “over-kill” silicones when they appear. Anti silicones are in fact silicones themselves. Uncontrolled use (not closing the can lid, leaving it open in the spray booth) of the Anti silicones will lead to many problems in the paint section of the body shop.	Use the product as recommended. It is better to clean and degrease properly, in conjunction with good housekeeping.
	Compressed air contaminated with oil and water, due to poor maintenance and check ups.	Check oil level weekly, yearly maintenance of air system by qualified maintenance company. Replace filters according maintenance schedule.
	Poor housekeeping, dirty contaminated working area.	Keep working area clean and free from contamination.
	Poor maintenance, soot from the oil heater.	Check heater and heating system regularly.

**Remedy**

Sand the paint coat smooth. Degrease thoroughly after sanding. Apply a thin coat first and then the subsequent coats. Allow adequate flash-off time between coats. If necessary, sand and apply sealer or filler before applying the topcoat.

<b>Description</b>	<b>11</b>	<b>Contour Mapping</b>
<p>Either the edges of an underlying coat in the system can be seen in the top coat, or sanding marks around the original repair are visible.</p>		

**Causes**

**Prevention**

	<p>Polyester body filler is not suitable for the substrate (poor adhesion)</p>	<p>Select the correct body filler related to the substrate.</p>
	<p>Application of the body filler over the old (softer) finish.</p>	<p>Apply polyester body filler <u>only</u> on bare metal (substrate), or on top of Primer Surfacer EP.</p>
	<p>Application of products over Softer (TPA like) finishes.</p>	<p>By doing the thinner test, one can take precautions like; Removing the old finish totally or Isolating the old finish with a sealer, Wash filler 590 or Primer Surfacer EP.</p>
	<p>Degreasing The substrate was not degreased, or not degreased properly, this means the bodyfiller has not adhered. While sanding, the edges crumble away, leaving an irregular feathered edge to the area around the repair.</p>	<p>Always thoroughly degrease before sanding.</p>
	<p>Poor sanding of the feather edge (too short).</p>	<p>Sand according to the correct sanding steps and create a smooth and wide enough feather edge.</p>
	<p>Poor equipment, or incorrect sanding technique.</p>	<p>Use quality-sanding tools and use them correctly.</p>
	<p>Incorrect sanding steps</p>	<p>When dealing with softer paint systems, sand one step further with dry P400.</p>
	<p>Application of the body filler over the old (softer) finish.</p>	<p>Apply polyester body filler only on bare metal. Avoid tension differences.</p>
	<p>Poor sanding of the featheredge of the body filler.</p>	<p>Sand according to the correct sanding steps and create a smooth feather edge from the body filler to the bare metal.</p>

**Causes**

**Prevention**

	<p>Incorrect, too fine sanding steps where taken. When starting with a too fine sanding grit one will find difficulty in flattening the polyester bodyfiller.</p>	<p>Sand according to recommended sanding steps. (80-120-220-320-400).</p>
	<p>Application of 1-K body filler for big dents. Shrinkage will lead to contour mapping.</p>	<p>Use 2-K body fillers to fill dents, 1-K only for small holes or scratches.</p>

**Remedy**

Sand and remove total system to sound layer. Mostly till bare metal.  
Apply a complete new system of primer / filler and topcoat.

In case of some small contour mapping, sand and apply the topcoat again.

- In case of extreme contour map.

Sand and remove total system, apply a complete new system of filler and topcoat.

When contour map is not too extreme, flatten the effected area with a block and finish with very fine sanding paper.

Polish the area to high gloss and check if the contour mapping is no longer visible.

<b>Description</b>	<b>12</b>	<b>Color Difference</b>
Color shade of the repaired area, does not match the original color of the car.		

**Causes**

**Prevention**

	Wrong Hardener and or Reducer selection.	Select only recommended Hardeners and Reducers for the product according to Technical Data Sheet.
	Incorrect mixing ratio.	Mix the components as mentioned in the Technical Data Sheet. Changing this mixing ratio influences the color.
	Wrong variant or color chosen when selecting the color code.	Select the right color or color variant. Correct stirring and sufficient tinting when necessary.
	Color match is not checked using spray-out panel.	Check color using spray-out panel.
	Mixing of the formula was not closely followed.	Correct mixing of the color formula.
	Poor stirring of the mixed toners.	Stir and mix the toners properly.
	Tinting of the color is not sufficient.	Tint as close as possible and check by spray-out.
	Wrong application, inadequate covering because of wrong application technique.	Apply according to correct application technique.
	Excessive spraying of the mistcoat	Apply a mist coat according Technical Data Sheet.
	Mixing colors on the mixing machine have not been stirred.	With the exception of water born paint, stir mixing colors on the mixing machine at least twice a day.
	Poor maintenance of the weighing equipment.	Keep scale clean and check yearly by qualified calibration company.
	Poor color documentation.	Keep color documentation clean and up to date.

**Remedy**

Sand the topcoat, mix the color again, check the color on a spray-out panel and re-apply the color again. Tint the color if needed.

<b>Description</b>	<b>13</b>	<b>Poor Through hardening</b>
<p>After a considerable length of time the body filler has still not hardened through.</p> <p>In some cases it will never harden completely.</p>		

**Causes**

**Prevention**

	Not the correct mixing ratio Polyester body filler with Peroxide Hardener.	Mix with the correct mixing ratio.
	Hardener exceeded shelf life.	Notice shelf life of the hardener and keep track on expire date.
	Hardener was left open for a long time and reacted with moisture.	Keep hardener can or tube closed when not used.
	Wrong Hardener selection.	Select recommended (sometimes dedicated) Hardener.
	Incorrect mixing ratio, too much or too little Hardener.	Mix according Technical Data Sheet.
	Lid of the Hardener can was not closed.	Always close the lids of Hardeners when not in use. Always close lids of all products.
	Hardener defective due to expiration date.	Pay attention to the expire-date of the products. Notice that the shelf life of Hardeners is usually shorter than the topcoat product.
	Application of too heavy layers.	Apply normal layer thickness according to recommended application technique.
	Too low drying temperature.	Adhere to the recommended surface drying temperature according to the products' Technical Data Sheet.
	Too short drying time.	Adhere to the recommended drying time according to the product Technical Data Sheet.

**13** Poor Through hardening

Causes		Prevention
	Drying temperature too low, temperature does not reach the level which is shown on the temperature meter.	Maintain the spray booth regularly and check meter indication.

**Remedy**

Dry the object for a longer period at the recommended temperature.

When insufficient through hardening is the case, remove total system and apply again.  
 When wrong products have been selected, remove the paint by washing it off with thinner or by sanding and re-spray again.



<b>Description</b>	<b>14</b>	<b>Overspray</b>
<p>Over-spray falls on freshly sprayed paint and is no longer absorbed.</p> <p>The surface of the fresh paint has a sandy appearance because of the dry paint particles sticking to it.</p>		

<b>Causes</b>		<b>Prevention</b>
	<p>Wrong selection of Hardener / Reducer. Too fast Hardener, paint film is closing too fast. Too fast Reducer, paint film is closing too fast, too fast evaporation of the Reducer will result in too much atomization (spray-mist).</p>	<p>Select recommended Hardener and Reducer related to temperature, job size and air flow.</p>
	<p>Spraying pressure is too high which causes too much atomization.</p>	<p>Spray according to Technical Data Sheet recommendation.</p>
	<p>Spraying distance is too far.</p>	<p>Adjust spraying technique and apply from recommended spraying distance.</p>
	<p>Wrong spray gun set up Check spray gun set up and adjust accordingly.</p>	<p>Use a correct spray gun set up in relation to the product to be sprayed.</p>
	<p>Poor maintenance, dirty spray gun.</p>	<p>Use a clean and proper spray gun.</p>
		

**Remedy**

In most cases polishing or light sanding and then polishing will be sufficient. In exceptional cases, sanding and re-spray will solve the problem.

<b>Description</b>	<b>15</b>	<b>Dust Inclusion</b>
Dust particles have fallen onto the wet paint film and became trapped as the paint film dried.		

**Causes**

**Prevention**

	Tack rag was not used to remove dust particles before spraying or over-spray between the base coat layers.	Always use a tack rag for removing dust particles and over-spray.
	Paint strainer was not used. Contamination in the paint was not filtered out.	Always use a paint strainer to filter out the contamination particles.
	Painter did not wear a suitable spray overall. Poor housekeeping and no preparation taken to minimize dust.	Always wear a suitable spray overall. Work as a painter clean and proper. Tack and blow off dust from vehicle and air hose prior to spraying. Always wear a head cover.
	Cheap masking tape / paper were used. Sometimes newspapers are used for masking.	Use quality masking paper and plastic, to minimize dust contaminations.
	No Anti-Static degreaser used. Unnecessary build up of electrical charge.	Use Anti-Static degreasers for cleaning plastic parts. Use earth clamp to neutralize charge.

**Causes**

**Prevention**

	Poor maintenance of the compressed air system. Poor maintenance of the spray booth.	Check oil level weekly, yearly maintenance of air system by qualified maintenance company. Replace filters according to maintenance schedule.
	Improper pressurization in the spray booth.	Check the spray booth pressure daily.
	Poor housekeeping.	Keep the surrounding area of the spray booth and mixing room clean.
	No dust prevention measures taken: <ul style="list-style-type: none"> <li>• Tack rag overall, air hose, hair cap etc.</li> <li>• Earth clamp from car to floor.</li> </ul>	A professional painter takes measures to minimize dust.

**Remedy**

- Dust particles can be removed with a needle when the paint is still wet.
- Minor dust particles in the dried paint film can be removed by sanding with fine sanding paper and polishing.

If dust particles are too big, there are too many, or when they are trapped too deep within the paint film, sand the surface and re-spray.

<b>Description</b>	<b>16</b>	<b>Floatation</b>
<p>Most colors consist of a combination of different pigments. Each pigment has its own specific gravity. The lightest pigments will float to the top of the wet paint film. This process can affect the final color.</p>		

<b>Causes</b>		<b>Prevention</b>
	<p>Incorrect spraying distance, irregular and / or too close Application of the paint is too heavy, layers are too thick Overlaps are too small (much smaller than 50%).</p>	<p>Use proper spraying technique.</p>
	Fluid nozzle too large.	Use correct spray gun set-up for the product.
	Spraying temperature too low.	Spray according to recommended temperature, between 20°C and 25°C.
	Object temperature is too cold.	Let object and paint acclimatize to ambient temperature.
	Paint is too cold to spray.	

**Remedy**

Let the paint flash-off for a longer period, apply a normal coat and finish.  
Heavy floatation (almost up to runs), let the paint dry, sanding the topcoat, and re-spray with normal recommended coats.



<b>Description</b>	<b>17</b>	<b>Low Gloss</b>
<p>Freshly applied paint appears with a lower gloss level than wanted.</p>		

<b>Causes</b>		<b>Prevention</b>
	Wax, polish or similar contamination has not been thoroughly removed and absorbed by the wet paint film.	Washing thoroughly with warm water and soap, followed by thoroughly degreasing (as recommended) before sanding and spraying.
	Insufficient through hardening of the filler, sanding scratches will go too deep in the surface. Topcoat will sink in the sanding scratches, resulting in a lower gloss level.	Sufficient through hardening of the filler by heating or IR. When total through hardening is reached, sand with recommended sanding grit.
	Too coarse sanding grit will appear with the same effect. Mostly also related to very small visible sanding scratches.	Use only recommended sanding coarseness.
	Insufficient through hardening, shrinking of filler or top coat after drying.	Follow the recommended drying times.
	Wrong product selection, too fast Reducer is used. Condensation can influence gloss level. Too coarse surface structure cause sinking of the clear coat.	Select the correct Reducer related to the repair size, temperature and airflow. Stick to the recommended flash off times.
	Incompatible Hardener and Reducer used. Incomplete through hardening of the product.	Always mix with the recommended products according to Technical Data Sheet.

**Causes**

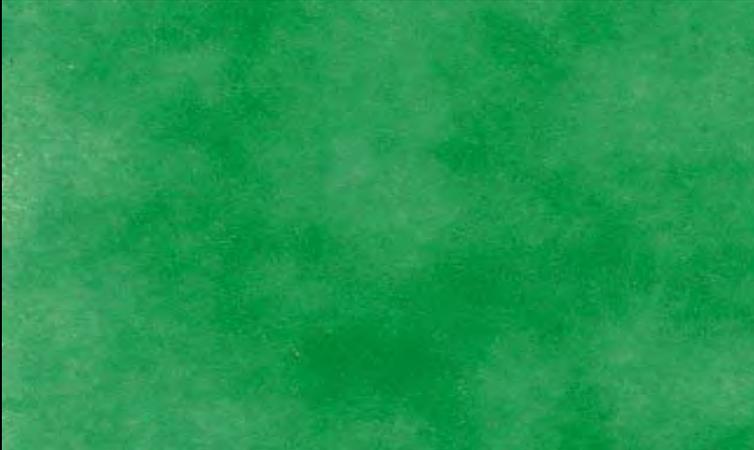
**Prevention**

	<p>Wrong product selection, too slow thinner is used. Flash off times ignored. Clear coat is applied over base coat even while Reducers or water were not completely vaporized out of the base coat.</p>	<p>Select the correct Reducer related too the repair size, temperature and air flow. Stick to the recommended flash off times.</p>
	<p>Application is too heavy; solvents are trapped and cause a dieback of the paint.</p>	<p>Apply normal coats as recommended.</p>
	<p>Flash off times are ignored, solvents are trapped and cause a dieback of the paint. The paint will shrink more than normal.</p>	<p>Apply normal coats and adhere to flash off times as recommended.</p>
	<p>Application is too heavy, followed by short flash-off time of the wet on wet primer / filler.</p>	
	<p>Drying time is too long and temperature is too high (<math>\pm 80^{\circ}\text{C}</math>).</p>	<p>Adhere to recommended drying temperatures and times.</p>
	<p>Insufficient ventilation from keeping the doors of the spraybooth shut while the car stays in the spraybooth overnight (without heating).</p>	<p>Let the drying cycle finish, leave the booth doors sufficiently open.</p>
	<p>Poor air circulation causes solvents to contaminate the spray booth during drying. The air contamination with these solvents will result in a dieback of the paint.</p>	<p>Check the valves of the spray booth air circulation system.</p>
	<p>Recommended drying temperature is not reached.</p>	<p>Maintain the spray booth regularly and check pressure meter indication.</p>
	<p>Drying time too long.</p>	<p>Adhere to recommended drying times.</p>

**Remedy**

Once the drying cycle has started, always finish it. Never stop somewhere half way and then leave the job in the booth overnight (result will be a gloss level die-back).

Raise gloss level by polishing. If this has no, or not the expected result, sand lightly (wet 1200 / 1500) and re-apply the clear coat. For topcoat sand with P1000 and apply topcoat again.

<b>Description</b>	18	Poor Covering
<p>The substrate or the repair spot is visible through the top coat. This often occurs on surfaces that are difficult to spray or on angles and edges.</p>		

**Causes**

**Prevention**

	<p>Poor overlapping of the coats. Irregular spraying distances. Ignoring flash-off times.</p>	<p>Apply according to recommended spraying technique. Look at the paint flow and check visually if the repair spot is covered. Work under sufficient lightning. Check color covering power before application.</p>
	<p>Lightning inside the spray booth is insufficient. Wrong color strength or old lightning that needs to be replaced.</p>	<p>Use recommended color strength for the spray booth. Use the right amount of lightning and under the correct angle. Replace the tubes after indicated numbers of hours in use.</p>

**Remedy**

When still spraying, apply extra coats until opacity is reached.  
After drying, scuff or sand (depending on the time after drying) and re-apply topcoat until opacity is reached.

<b>Description</b>	<b>19</b>	<b>Lifting</b>
<p>During application of a product, the paint film partially dissolves.</p>		

**Causes**

**Prevention**

	<p>Selection of incompatible products with the substrate. Soft, TPA like paint system repainted with a solvent borne base coat.</p>	<p>Do the thinner test, seal or remove existing substrate when needed.</p>
	<p>Insufficient adhesion to substrate of previous applied product.</p>	<p>Select recommended products (primers / fillers) related to substrate.</p>
	<p>The degreaser is too aggressive related to the Substrate, the Primer, the filler, the previous applied top coat or the existing old finish.</p>	<p>Check, (especially with new plastic parts) if you are not sure on an edge or non-visible side of the part / panel if the degreaser will not be too aggressive.</p> <ul style="list-style-type: none"> <li>Think about M600, which is sometimes too aggressive for new plastic bumpers. These can only be cleaned with water and soap or Autowave Degreaser.</li> </ul> <p>M700 is too aggressive when the car is freshly painted.</p>
	<p>Application is too heavy with solvent borne product. Substrate was too sensitive for the solvents.</p>	<p>Apply thinner layers and flash off well between the layers. Apply sealer coat if needed.</p>

**Remedy**

The lifted paint needs to be removed completely down to a sound layer.  
If necessary a new primer and or filler needs to be applied.

<b>Description</b>	20	Orange Peel
<p>The freshly applied paint exhibits poor flow and resembles orange peel.</p>		

Causes		Prevention
	Wrong mixing ratio, too high spray viscosity, the paint is too thick and flows poorly.	Mix according to Technical Data Sheet.
	Wrong Hardener selection.	Select the recommended Hardener.
	Wrong Reducer selection related too temperature, job size and air flow.	Select the correct Reducer related too temperature, job size and air flow.
	<ul style="list-style-type: none"> <li>Incorrect spraying distance, irregular or distance too far</li> <li>Too heavy application of the paint, layers are too thick</li> <li>Too large and / or irregular overlaps</li> </ul>	Apply according to the recommended spraying technique.
	Spray gun set-up too large or too small.	Use correct spray gun set-up for the product as per Technical Data Sheet.
	Spraying temperature is too low.	Spray according to recommended temperature, between 20°C and 25°C.
	Object temperature is too cold.	Let object and paint acclimatize to ambient temperature before spraying.
	Paint is too cold to spray.	

### Remedy

Slight orange peel effect can be removed by sanding and polishing to restore gloss and flow level.

When orange peel is more serious the surface must be sanded and re-sprayed.

<b>Description</b>	21	<b>Pinholes</b>
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Body filling: air becomes trapped in the body filler during filling. Sanding will open the surface, causing small holes.

Primer / Filler: Too heavy application of (2K) filler, not respected flash off time, blow drying between coats can result in solvent pops. During sanding the filler, the solvent pops become little pinholes.



	Causes	Prevention
	Wrong mixing technique; do not stir to avoid air inclusion.	Mix according to recommendation.
	Wrong application technique, incorrect knife angle during application.	Apply the products with recommended tools, at the right angle.
	Extension of the pot-life of the body filler.	Apply the polyester body filler before pot life is exceeded.
	Drying out of the body filler.	Close can after use. After opening a new can, mix the binder thoroughly with the bodyfiller.
	Application of the paint too heavy Too much layer thickness. Too short flash-off times between application and drying. Too much airflow (formation of a viscous surface skin).	Apply the products according to recommendation and Technical Data Sheet.
	Exceeding the potlife of the paint.	Use the product within the pot life, according Technical Data Sheet. Do <b>not</b> attempt to extend the pot life by adding extra Reducer.
	Too fast air flow inside the booth. Too intense forced-ventilation. (Formation of a viscous surface skin).	Maintain the spray booth regularly, check the air flow.
	Too high drying temperatures.	

<b>Remedy</b>
---------------

Sand the paint or filler to remove pinholes as much as possible, if needed, apply filler (according to recommendations). Dry and sand the filler, and apply topcoat system again.



<b>Description</b>	22	Rust
<p>Paint system has been forced up over small areas, in strange patterns or as blisters.</p> <p>When punctured we discover rust and moisture on the metal surface.</p>		

Causes		Prevention
	<p>Previous rust was not properly removed.</p> <p>Application of the topcoat directly over bare metal.</p>	<p>Remove existing rust thoroughly, particularly pitted corrosion.</p> <p>Always apply recommended primer followed with filler for optimal warranty.</p>
	<p>Substrate was insufficiently degreased, primer could not adhere well.</p> <p>Substrate was insufficiently degreased, contamination stays at surface, will cause blisters and results in rust formation.</p>	<p>Always degrease sufficiently before application of the primer, degrease according recommendations (two clean cloths, one wet one dry).</p> <p>Always degrease sufficiently before application of the primer, degrease according recommendations (two clean cloths, one wet one dry).</p>
	<p>Wrong Hardener was selected for example the Wash Primer CR.</p> <p>Wrong mixing ratio. Influences the cross linking so, no optimal adhesion and rust protection.</p>	<p>Always select the recommended Hardeners.</p> <p>Mix according Technical Data Sheet.</p>
	<p>Insufficient layer thickness was applied.</p> <p>Premature application of products after degreasing.</p> <p>Condensation forming at substrate.</p>	<p>Apply according to Technical Data Sheet recommendation.</p> <p>In humid conditions, let panel acclimatize before applying primer / filler / top coat .</p>

**Remedy**

Remove entire system, remove thoroughly all rust (preferably by sand- blasting), degrease and apply total new system.



<b>Description</b>	<b>23</b>	<b>Runs</b>
<p>Through uneven thickness of the coat in some places, runs can be seen, mainly on vertical surfaces.</p> <p>The accumulation of paint in the area is so great that the paint coat starts to run while still wet.</p>		

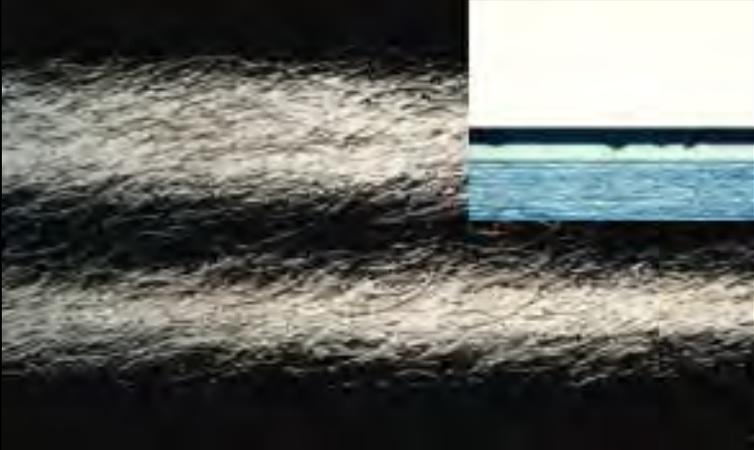
**Causes**

**Prevention**

	The substrate has not been properly degreased.	Paint runs because it cannot properly adhere to the surface.
	Wrong Reducer selected related too temperature. Spray temperature is too cold, Reducer selection too slow.	Select the correct Reducer related to spray temperature, job size and air flow.
	Wrong mixing ratio of the paint. Spray viscosity is too low, the paint is too thin.	Mix the products according the Technical Data Sheet.
	Wrong spraying technique; Incorrect spraying distance, irregular and / or too close Application of the paint is too heavy, increasing film thickness Overlaps are too small, much less than 50%.	Apply product using the proper spraying technique.
	Spraygun set-up is too large.	Use correct spraygun set-up for the product.
	Spraying temperature is too low.	Spray according to recommended temperature, between 20°C and 25 °C.
	Object temperature is too cold.	Let object and paint acclimatize to ambient temperature before spraying.
	Paint is too cold to spray.	

**Remedy**

Small runs can be sanded away with fine sanding paper; surface can be polished back to gloss. In case of sanding through the topcoat, re-spraying is needed.

<b>Description</b>	<b>24</b>	<b>Sanding Marks</b>
<p>Fine scratches become visible in the finish. Problem can reveal immediately or after a period of time.</p> <p>Often sanding patterns of sanding machine or block is visible.</p>		

<b>Causes</b>		<b>Prevention</b>
	The "100" rule is not followed.	Use recommended sanding steps. Apply guide coat between sanding steps.
	Filler was not sufficiently through hardened.	Stick to the recommended through hardening time.
	Grit or dirt causing scratches during sanding.	Clean and degrease properly before sanding, use recommended sanding paper.
	Too course sanding material caused scratches.	Do not use machine-sanding paper for sanding by hand, sanding grits are too course for sanding by hand.

**Remedy**

After complete through hardening, sand the topcoat with recommended sanding grits until scratches are no longer visible, and re-apply the top coat again.



<b>Description</b>	<b>25</b>	<b>Settlement</b>
<p>If paint is stored for a longer period, certain pigments can sink to the bottom of the can. This is caused by weight differences of the pigments. The paint is no longer a homogeneous mass.</p> <p>Extreme settlement is also called hard-caking. A little settlement is also called soft-caking.</p>		

**Causes**

**Prevention**

	Too high or too low storage temperature.	Try to keep the storage temperature at, $\pm 20^{\circ}\text{C}$ , without too many temperature fluctuations.
	Shelf life of the paint has been exceeded.	First in first out rule when supplementing stock.
	Mixing toners on the mixing machine are not regularly stirred.	Stir the toners on the mixing machine for 15 minutes, twice a day, in the morning and after lunch.
	Paint has been stored for too long in a thinned condition.	Do not store thinned paint too long.

**Remedy**

If shelf life has **not** been exceeded and the temperature has **not** adversely affected the quality of the paint, you can put the paint in a paint shaker, or stir for at least 15 minutes on the mixing machine.

<b>Description</b>	<b>26</b>	<b>Solvent Pops</b>
<p>Small pops (open on top) can be seen on the freshly dried surface.</p> <p>Solvents becoming trapped inside the paint film and will “pop” open during or after drying of the topcoat.</p>		

**Causes**

**Prevention**

	<p>Too fast reducer selected. Can occur especially in hot conditions due to quick drying of the paint film causing solvents to be trapped underneath the closed paint film.</p>	<p>Select the recommended Reducers related too temperature job size and air flow.</p>
	<p>Too slow Reducer selected. Solvents will be trapped when following coats will be applied.</p>	<p>Select the recommended Reducers related too temperature job size and air flow.</p>
	<p>Wrong or other brand/poor quality product selected.</p>	<p>Select recommended products, suitable for the product only.</p>
	<p>Application is too heavy. Too much time needed for evaporation of the solvents.</p>	<p>Apply normal layers as recommended.</p>
	<p>None, or flash off time is too short. Too fast application of the different layers. Next coat is applied too soon.</p>	<p>Adhere to recommended flash off time. When applying heavy coats, extend the flash off time.</p>
	<p>Force dried with IR too quickly, no flash off time.</p>	<p>Before using the IR dryer, always take note of the recommended flash off time.</p>
	<p>Drying temperatures too high.</p>	<p>Keep drying temperature at recommended level according to the Technical Data Sheet.</p>

	26	Solvent Pops
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	Causes	Prevention
	<p>Too fast air flow inside the spray booth. In combination with intense forced-ventilation which will rapidly cause formation of a surface skin.</p> <hr style="border: 0; border-top: 1px solid black;"/> <p>Too high drying temperatures.</p>	<p>Maintain the spray booth regularly, check the air flow.</p>

**Remedy**

To repair, sand the solvent pops and they will become fine pinholes.  
 If there are many pinholes it is advised to sand the total panel and apply 2-3 coats of 2K filler.  
 After sanding the 2K filler re-apply topcoat.



<b>Description</b>	<b>27</b>	<h2 style="margin: 0;">Water Marks</h2>
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The edges of evaporated water droplets can be seen on the paint.



	<b>Causes</b>	<b>Prevention</b>
	Wrong mixing ratio. Incorrect amount of Hardener used, causing poor through hardening of the paint.	Mix always according to Technical Data Sheet recommendations.
	Wrong type of Hardener selected, (fast or slower).	Select recommended Hardener, related to temperature, job size.
	Wrong Hardener selected, being incompatible with the product.	Always select recommended Hardeners. See Technical Data Sheet.
	Heavy paint coat application will cause insufficient through hardening within the recommended drying time.	Apply normal coats according to recommendation. Extend drying time.
	Paint coat has not completely hardened through. Freshly painted surface has been exposed to rain or water drops while it was cooling down.	Allow the fresh paint to cool down before exposure to water.

### Remedy

Polish the surface until the watermarks disappear (if necessary use ultra fine sand paper first).

If the watermarks are still visible after polishing, sand surface according to recommendation and re-spray the affected parts.

Note: in case that the selected Hardener is not compatible (paint will not fully through hardened); remove total system and apply a new paint system.

<b>Description</b>	<b>28</b>	<b>Wrinkling</b>
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The paint surface acquires a finely waved appearance.



	<b>Causes</b>	<b>Prevention</b>
	Incorrect hardener or thinner used.	Use the Sikkens hardener and/or thinner suitable for the product.
	Spraying Paint applied to a substrate that was only partially dry.	Ensure that substrate has through-hardened when you are degreasing or sanding.
	Flash-off times not adhered to; the subsequent coat has been applied to a coat that was still wet.	Allow the recommended flash-off times. Make sure air circulation is good.
	Paint applied too heavy.	Apply the recommended number of coats, using the correct spraying technique. Avoid heavy applications.

**Remedy**

For a slightly wrinkled surface, force-dry, sand and re-spray.  
 If the surface shows of wrinkling, remove the paint and apply once more.

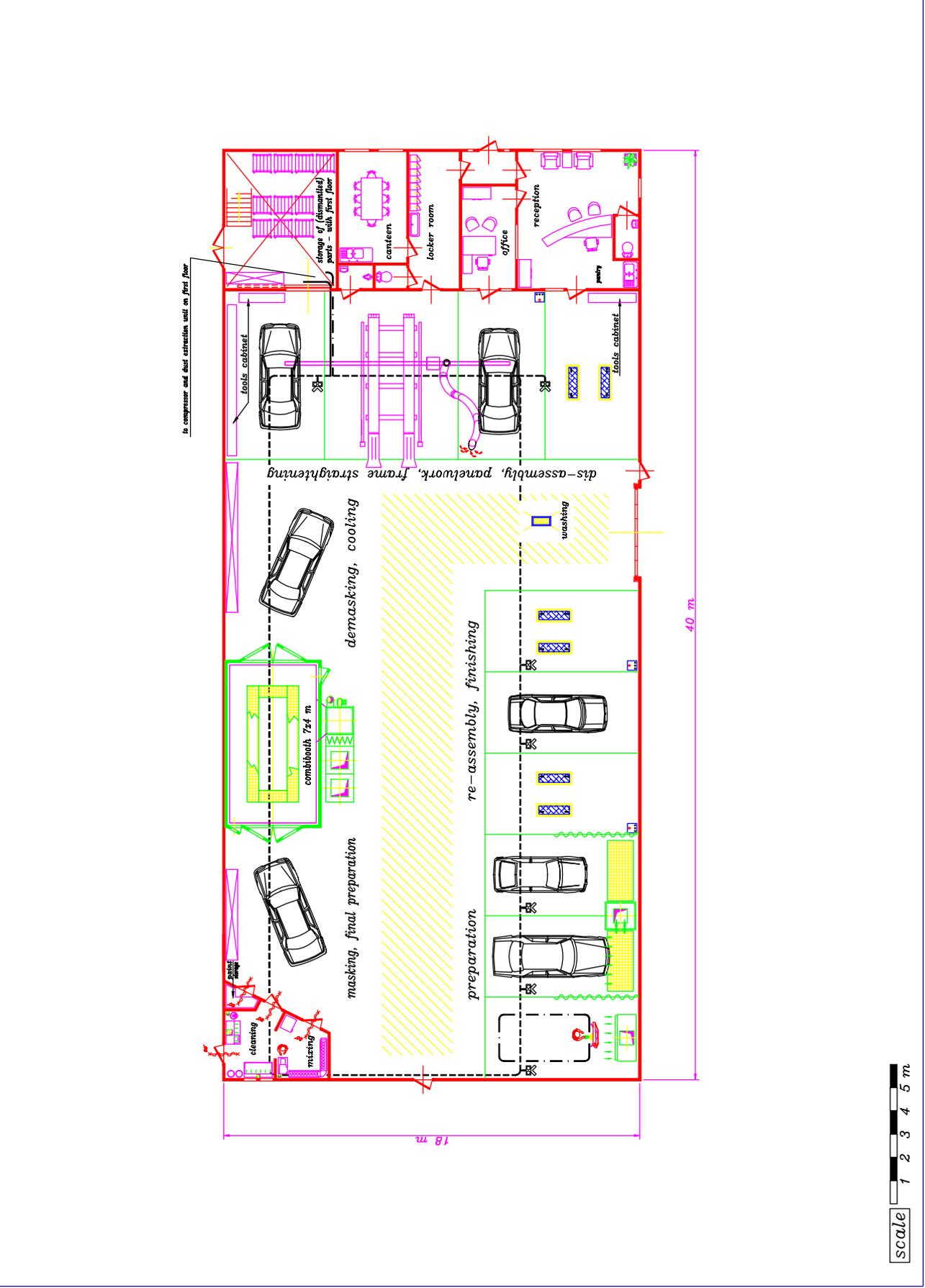


<b>Description</b>	<b>29</b>	<b>Peeling</b>
<p>Poor adhesion of the clearcoat may show immediately after application and drying of the paint, but it may also develop after some weeks or months.</p>		

<b>Causes</b>		<b>Prevention</b>
	<p>Wrong application technique, mist coat applied too course. No tacking between the layers.</p>	<p>Apply according to recommendation. Tack between every base coat after flash off.</p>
<p>Flash off time was insufficient of not adhered to. Solvents or water residue is trapped between the base coat and the clear coat. This can cause adhesion problems between the base and the clear coat.</p>	<p>Flash off sufficiently between layers.</p>	
<p>Wrong mixing (too low in viscosity), related to increased layer thickness.</p>	<p>Mix according to product Technical Data Sheet, avoid excessive layer thickness.</p>	

**Remedy**  
 Remove all areas that are not adhering properly down to a sound layer and re-apply the paint system according to recommendations.  
 In most cases the entire previously applied system must be removed and a completely new system must be applied according to paint manufacturer's recommendation.





specifications:

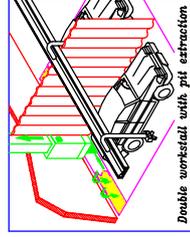
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built-up area, m<sup>2</sup>: 720

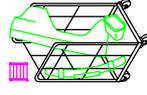
productive staff: 8

no. of workstalls: 14

jobs per month: 75-100



Double workstall with pit extraction



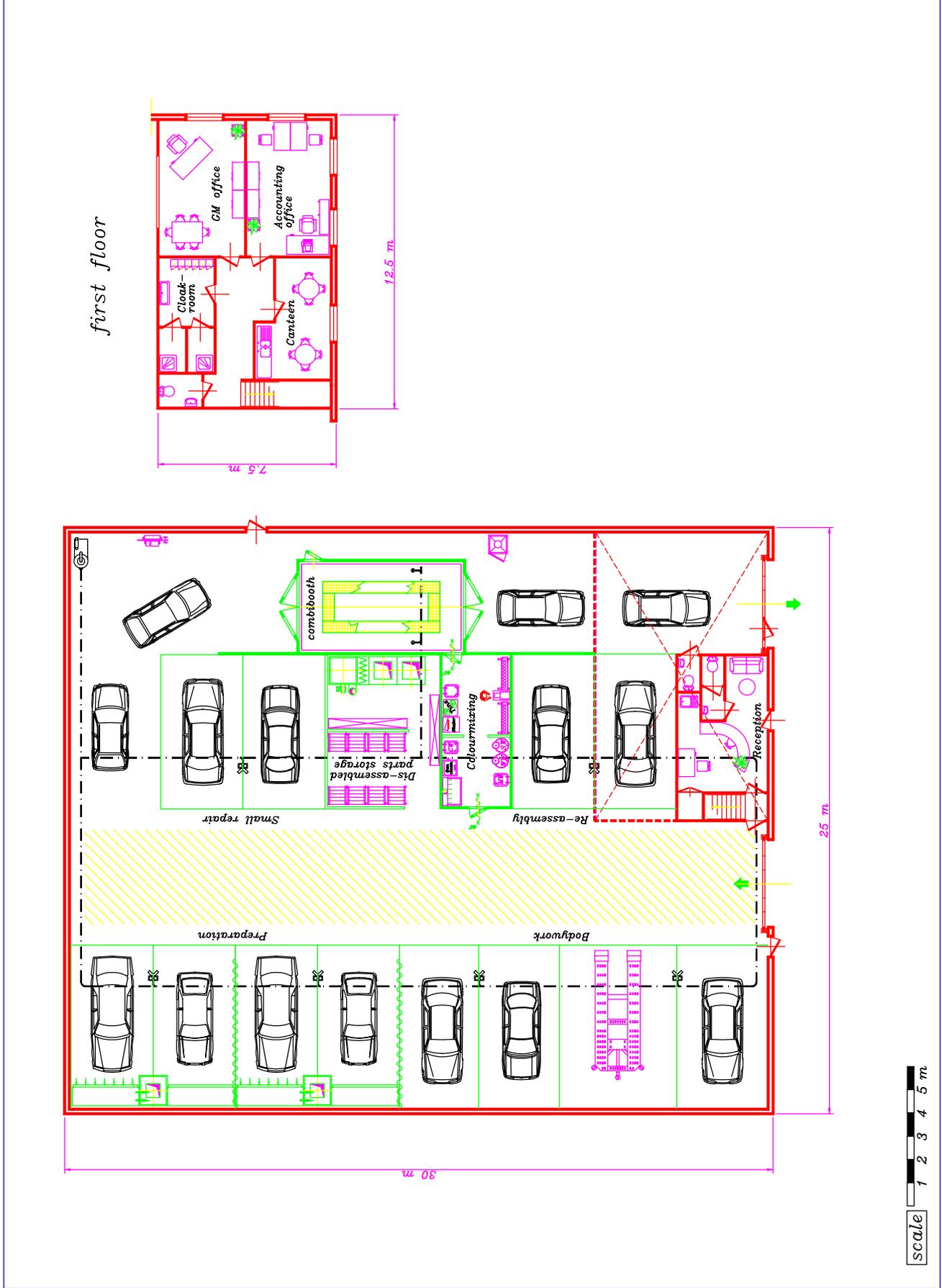
trolley for dismantled carparts



free transport track

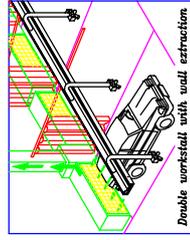
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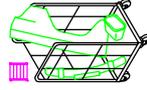


specifications:

country:	Egypt
built-up area, m <sup>2</sup> :	750
productive staff:	10
no. of workstalls:	17
jobs per month:	80



Double workstation with wall extraction.



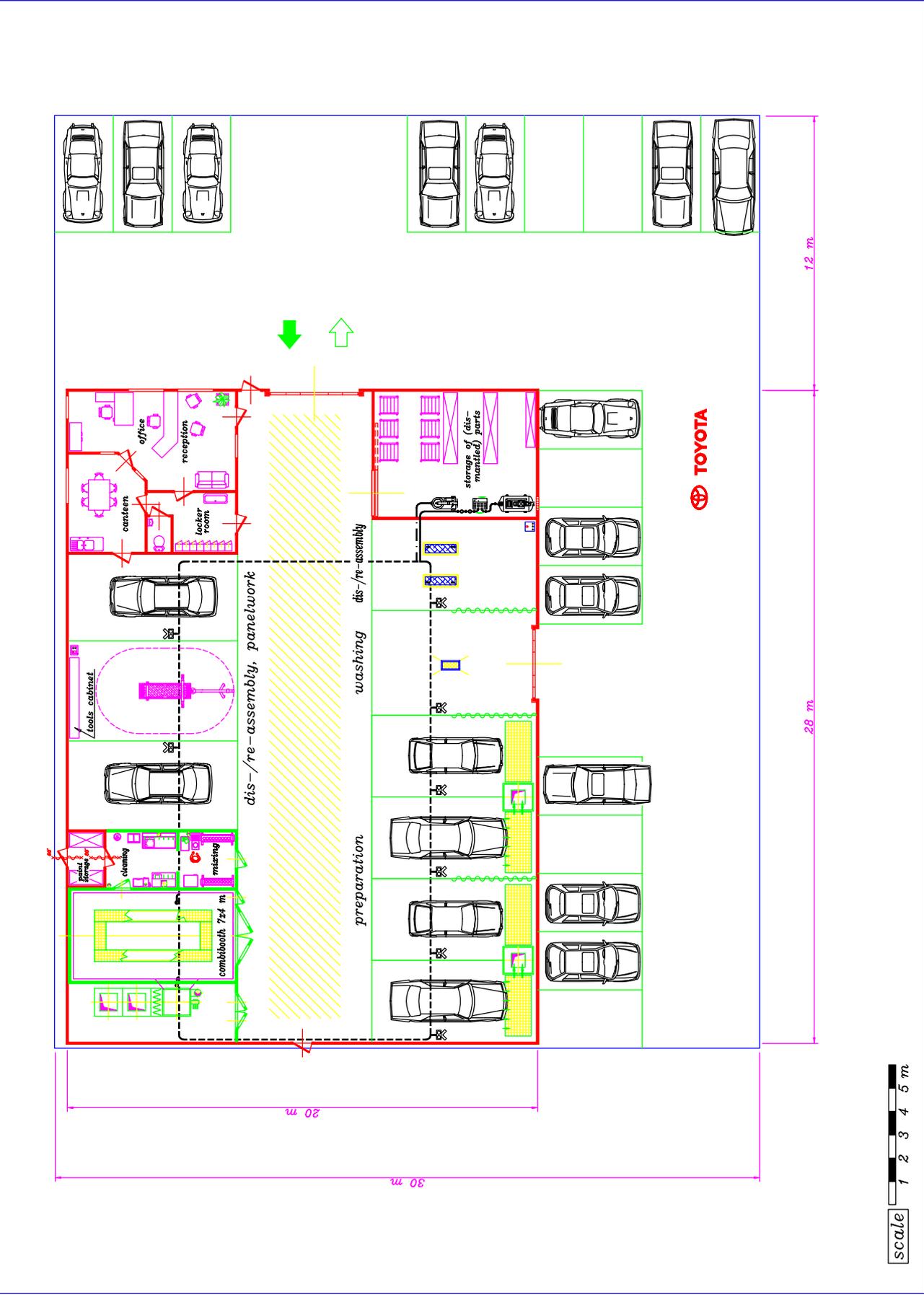
trolley for dismantled car parts



free transport track

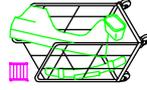
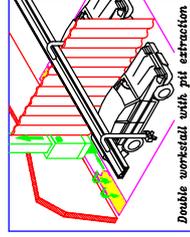
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specifications:

country:	Poland
built-up area, m <sup>2</sup> :	550
productive staff:	6
no. of workstalls:	10
jobs per month:	70

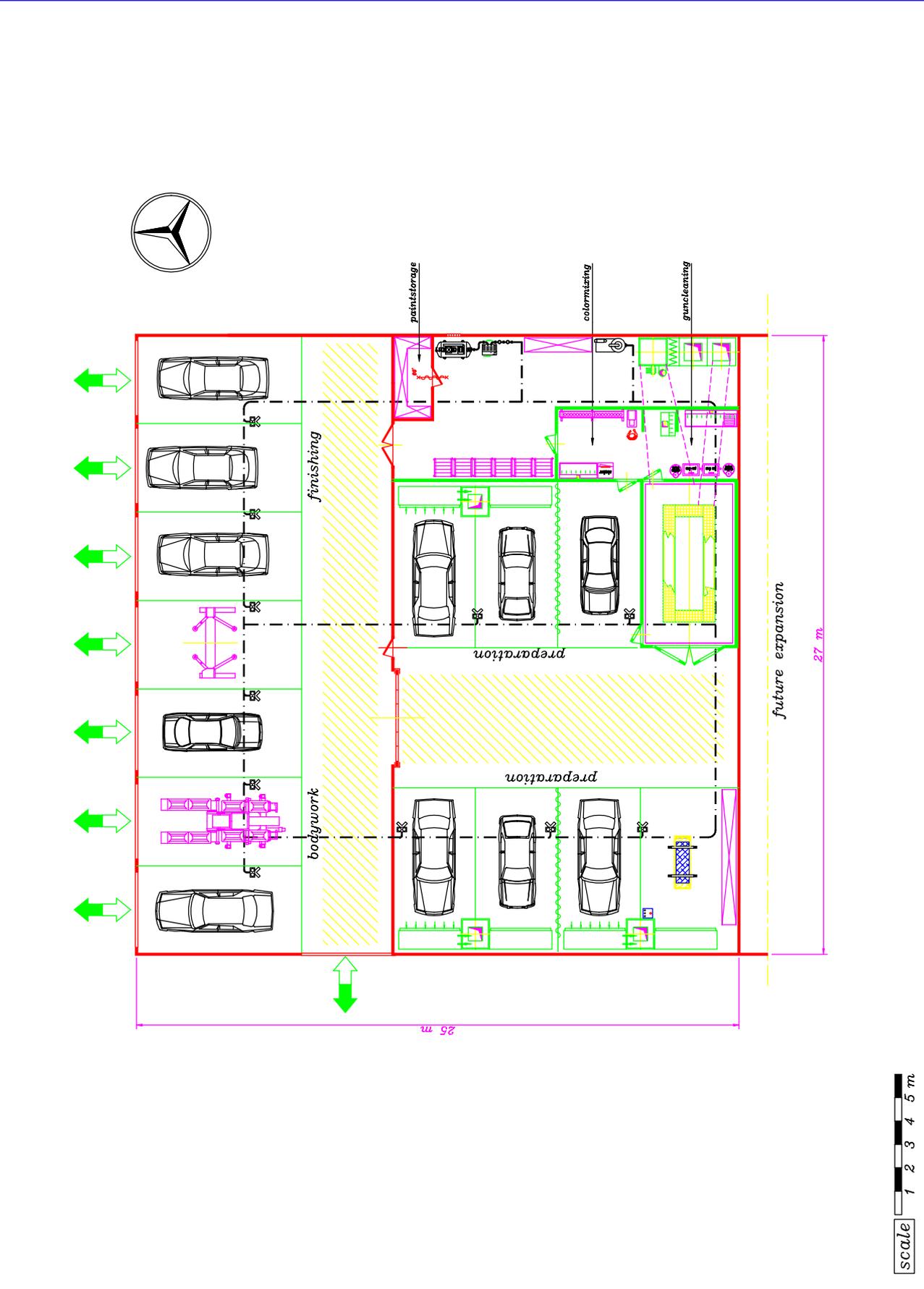


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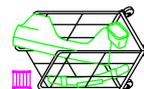
**AKZO NOBEL**

**SIKKENS**



**specifications:**

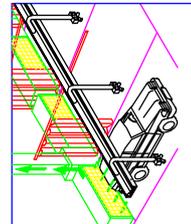
country:	Sri Lanka
built-up area, m2:	650
productive staff:	10
no. of workstalls:	15
jobs per month:	80



trolley for disassembled car parts

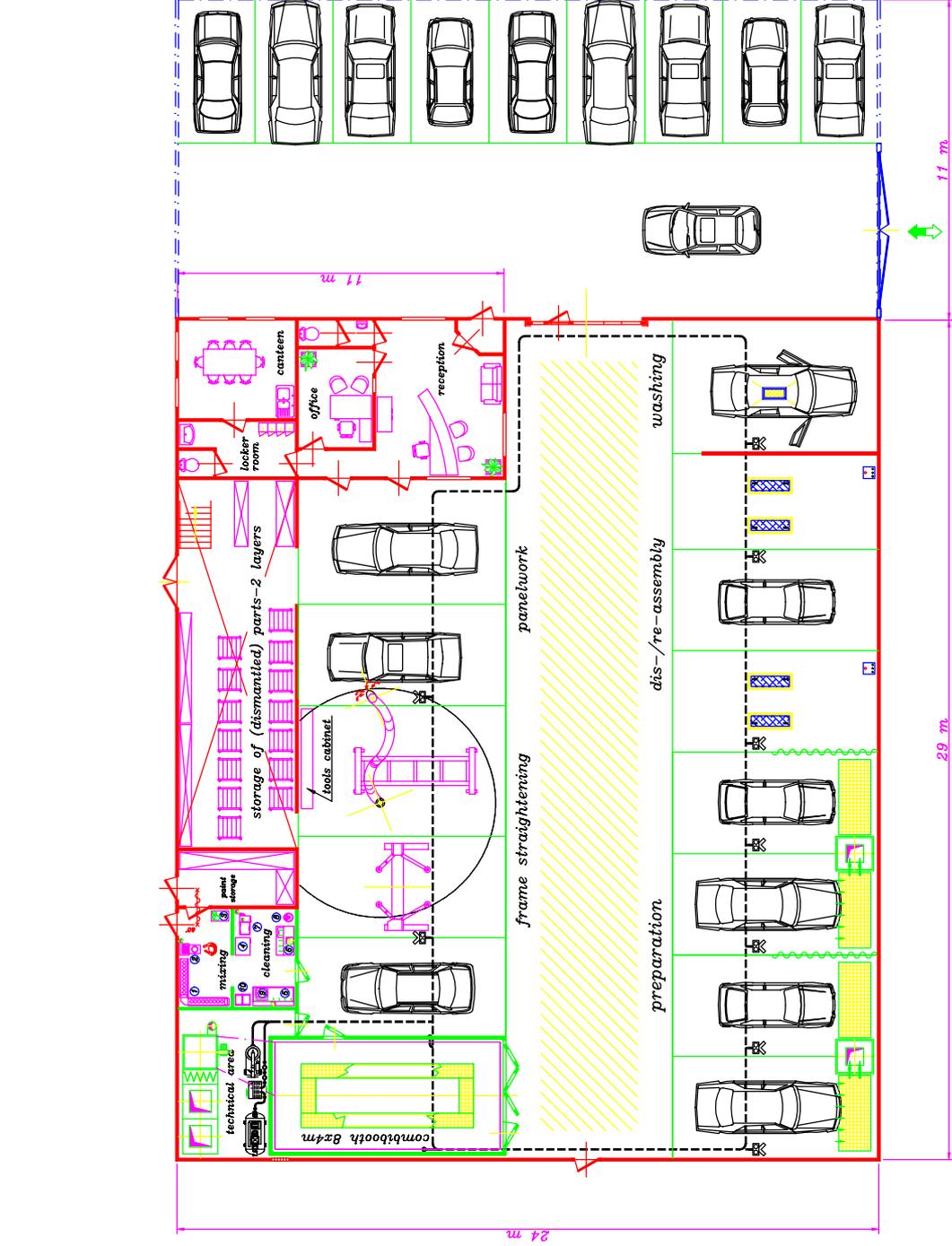


free transport track



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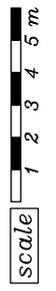
country:	Russia
built-up area, m <sup>2</sup> :	750
productive staff:	9
no. of workstalls:	14
jobs per month:	80

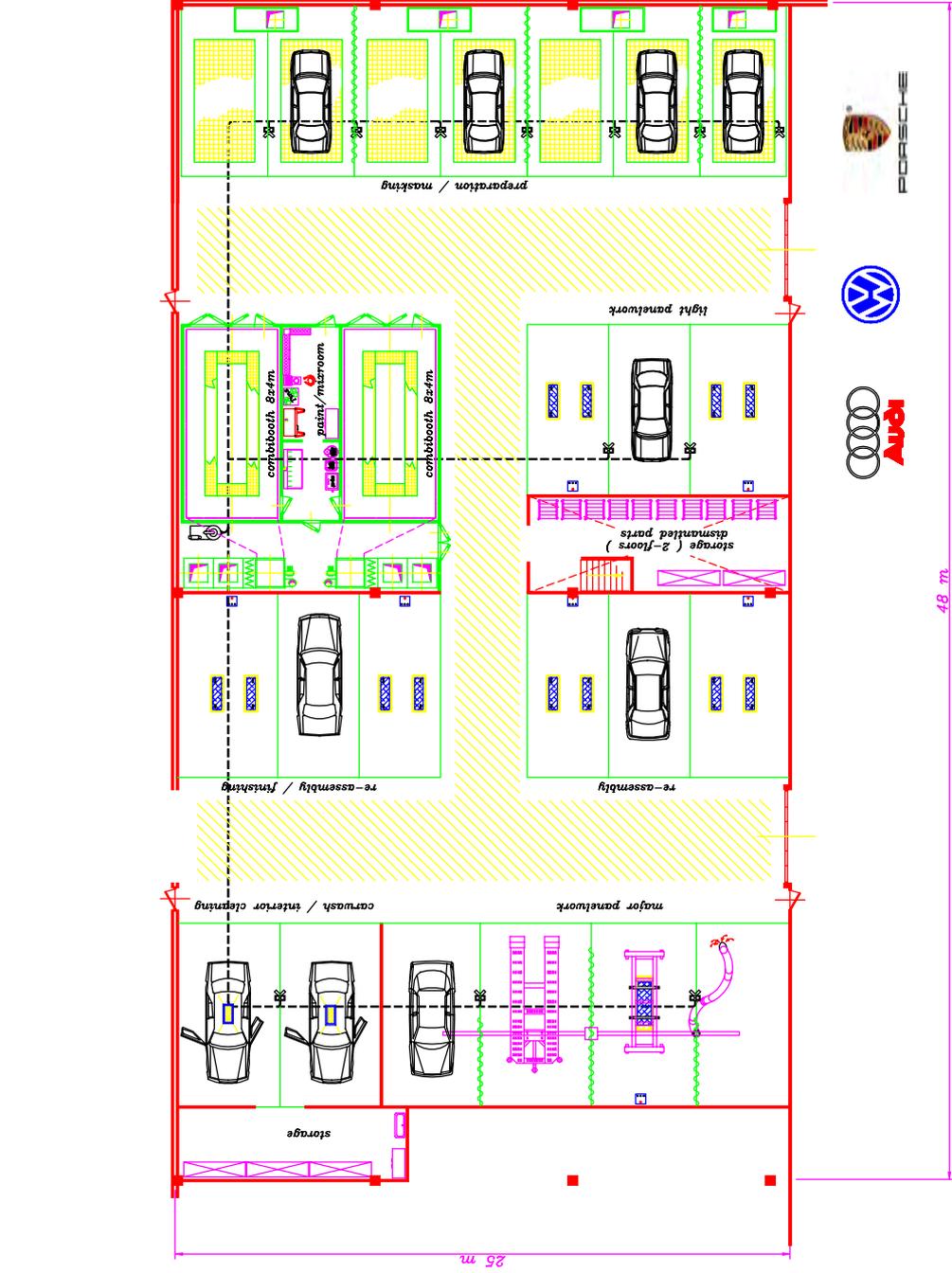
Double workstation with pit extraction

trolley for dismantled car parts

free transport track

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**specifications:**

country: Saudi Arabia

built-up area, m<sup>2</sup>: 1100

productive staff: 18

no. of workstalls: 24

jobs per month: 170

Double workstation with wall extraction

trolley for dismantled car parts

free transport track

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