

LIGHT ALLOY WHEEL REPAIR.

2024

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INTRODUCTION.

- Wheels are highy stressed vehicle components of high safety relevance. For Safety reasons, leading car makers have until now not approved any refinish processes for wheels. And this principle has also applied so far to light alloy wheels.
- Modern metal putty and paint materials and the latest repair processes make it possible to repair the surface of light alloy wheels, albeit within certain limitations.
- This guide describes what is currently technically possible. To what extent a repair makes economic sense depends on many factors.
- This guide merely contains recommendations and cannot serve as a basis for warranty claims against Axalta.

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GUIDELINES.

- ISO 14400, point 5: After removal, wheels, studs and nuts shall be checked closely to ensure that they are in good condition: namely that any fracture, crack, deformation, corrosion, heavy wear or other kind of non-conformity are not present. Moreover, no technical modification on the wheel shall be made. Repair by means of welding or by the addition of material on wheels or wheel centres having breakage, fissures, cracks or high wear, shall not be made, as they can introduce additional stresses in the critical areas.
- EUWA (Association of European Wheel Manufactures): Repair of a damaged wheel or disc by heating, welding or addition or removal of material is absolutely forbidden.
- ETRTO – (The European Tyre and Rim Technical Organisation): Damaged or deformed wheels or wheels with cracked or deformed bolt holes must not be repaired or put into service.
- What does „cosmetic repair" mean?
  The term „cosmetic repair" always refers to the expert technical restoration of the wheel in terms of visible defects by polishing, local sanding, smoothing of nicks/notches, and possibly by applying surfacer, primer and paint.
- Such repairs relate to superficial, visible blemishes that, in the event of further use of the untreated wheels, would result in neither technical nor legal restrictions (e.g. during on MOT inspection under Art. 29 StVZO (German vehicle roadworthiness regulations)).

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GUIDELINES.

- Source:
  Final position paper on cosmetic wheel repairs of the Vehicle Engineering Commitee, special committee on wheels and tyres at the German Federal Ministry of Transport, building and urban development (BMVBS).

  The restrictions on repair and preparation issued by the wheel manufacturer remain unaffected by these guidelines.

  A repair may only be carried out with the tested and prescribed paint materials.

  The approval of a repair must ultimately be granted by the skilled refinisher and cannot be forcibly obtained from an expert under third-party liability claims.

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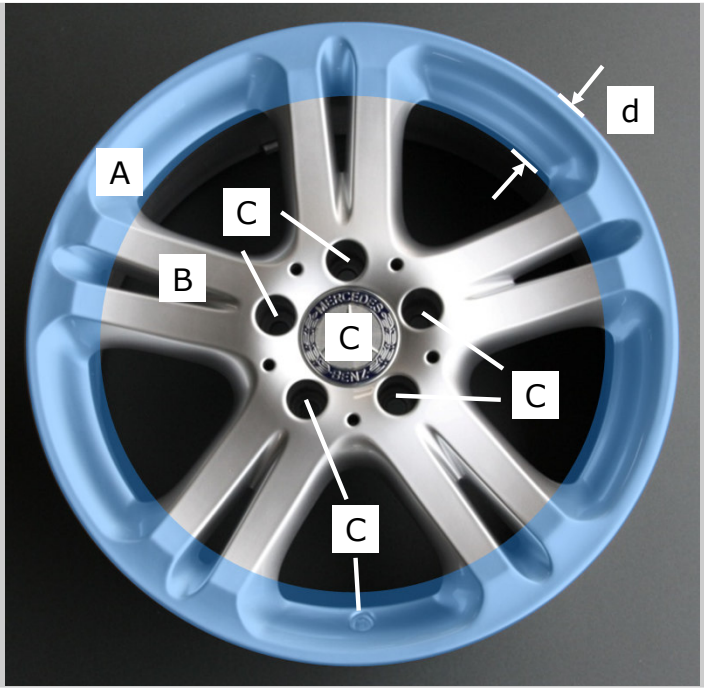
GUIDELINES ACCORDING TO MERCEDES-BENZ SERVICE INFORMATION SI40.10-P-0026A.

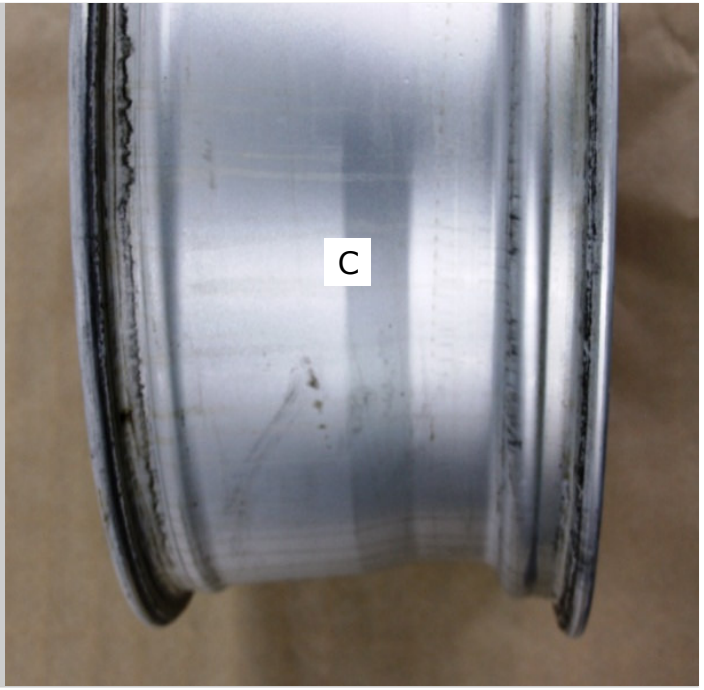
A: Zone A

B: Zone B

C: Zone C

d: 25 mm





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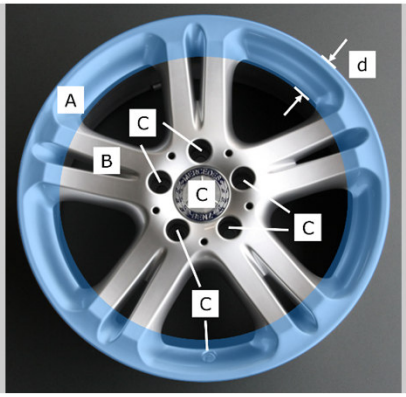
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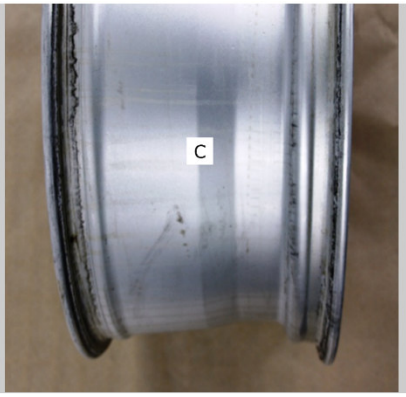
A: Zone A

B: Zone B

C: Zone C

d: 25 mm







	Zone A	Zone B	Zone C
Description	Area measuring 25 mm (d) radiating in from outer side of rim flange. Area visible outer side of wheel (design surface).	Area beyond 25 mm (d) from outer side of rim flange. Area visible outer side of wheel (design surface).	Wheel bolt bore, wheel center hole, valve bore and wheel contact surface, rim base and inner side of rim flange (tire seat).
Permissible treatment	If there is any material damage to a depth ≤ 1 mm, local machining and painting are possible.	Painting only.	None.

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GUIDELINES ACCORDING TO MERCEDES-BENZ SERVICE INFORMATION SI40.10-P-0026A.

The following restrictions apply for the treatment and painting of light alloy wheels:

- High temperatures and temperature loads on just one side must be avoided!
- Light alloy wheels may only be heated up to a max. 90 ℃ for max. 40 min.
- Light alloy wheels must not be heated at specific points using an infrared lamp, heat gun or similar device!
- Only cast light alloy wheels with the designations AlSi7Mg or AlSi7Wa may be machined and painted, with restrictions.
- Light alloy wheels may only be painted.

  (Material label AlMg1SiCu or Al6061; AlSi1MgMn or Al6082 or AS10.62)

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The following must NEVER be treated and painted:

- Light alloy wheels with cracks.
- Light alloy wheels with material damage deeper than 1 mm.
- Light alloy wheels with material damage in zone B.
- Areas of zone C.
- Thermally stripped, blasted or reshaped light alloy wheels.
- Light alloy wheels to which heat has been applied, from which material has been removed or which have been machined.
- Light alloy wheels whose outer or inner rim flange is deformed.
- Wheels that have already been treated.
- Bright-finished wheels coated with pure clear-coat varnish (i.e. in brightfinished area).
- Wheels with metallic gloss effects (chrome-plated wheels).

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GUIDELINES ACCORDING TO MERCEDES-BENZ SERVICE INFORMATION SI40.10-P-0026A.

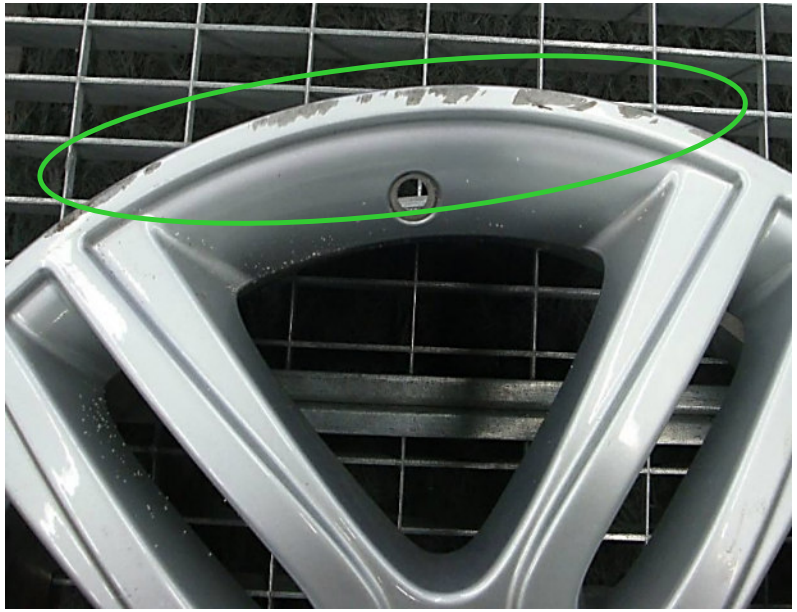
- The repair and treatment restrictions specified by the wheel manufacturer remain unaffected by this. Treatment may be carried out with approved materials only.
- Further information on the surface treatment of light alloy wheels (guidelines) and approved materials can be found in the paint portal of the XENTRY Portal.
- For the repair of light alloy wheels on Mercedes-Benz vehicles please refer also to the Mercedes-Benz Service Information „Cosmetic processing of light alloy wheels“ SI40.10-P-0026A.

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EXAMPLES OF DAMAGE.

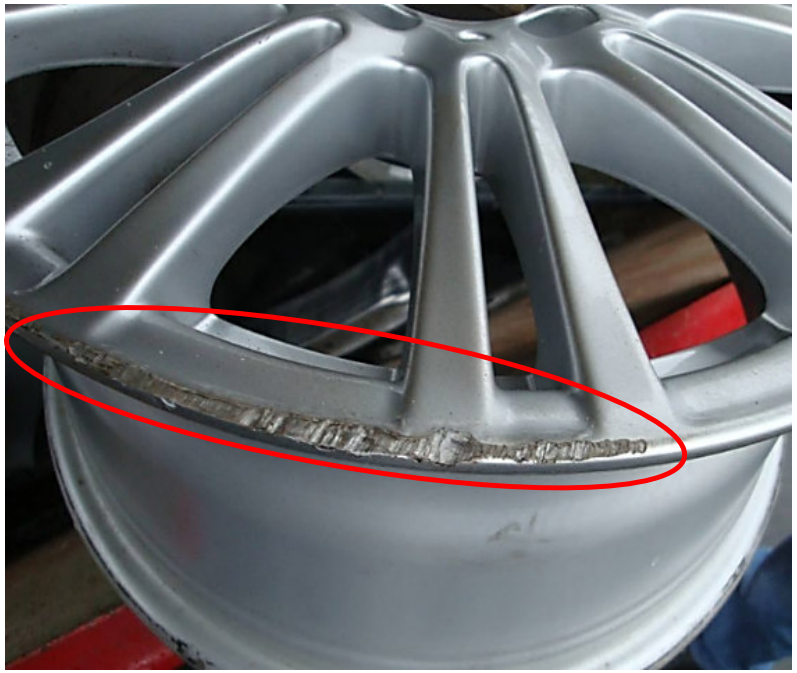
- Damaged paint on wheel face
  = repair **possible**.

- Tip
  Micro Repair is also suitable for straight forward paint repairs on the rim flange and edge.



EXAMPLES OF DAMAGE.

- Damage deeper than 1 mm
  = repair **not permitted**!



EXAMPLES OF DAMAGE.

- Damaged paint on wheel face
  = repair **possible**.

- Tip
  Micro Repair is also suitable for straight forward paint repairs on the rim flange and edge.



EXAMPLES OF DAMAGE.

- Rim flange is deformed, axial and lateral run-out are not OK.

= repair **not permitted**!



EXAMPLES OF DAMAGE.

- Damaged paint on wheel face
  = repair **possible**.

- Tip
  Micro Repair is also suitable for straight forward paint repairs on the rim flange and edge.



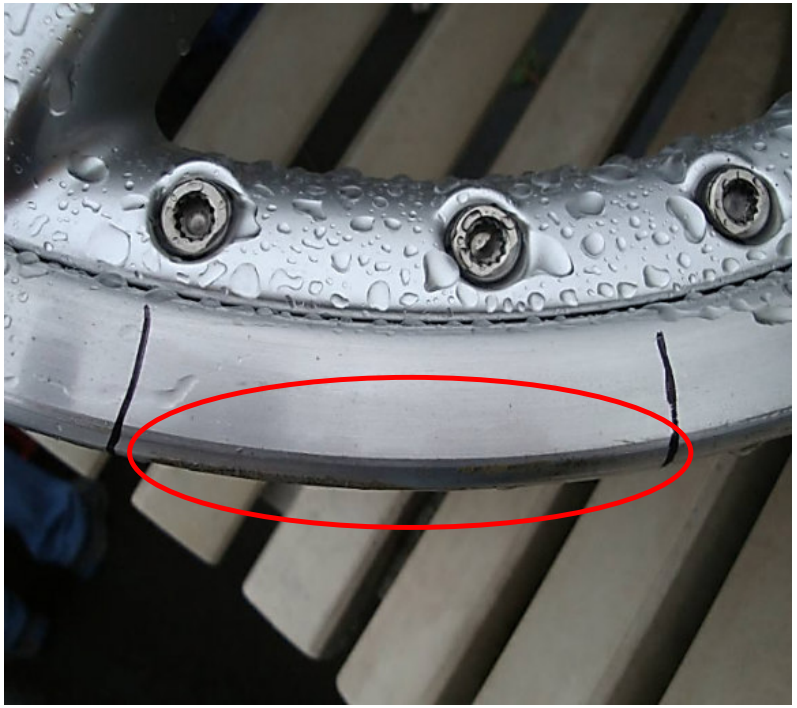
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EXAMPLES OF DAMAGE.

- 2-part aluminium wheel: external ring is burnished.

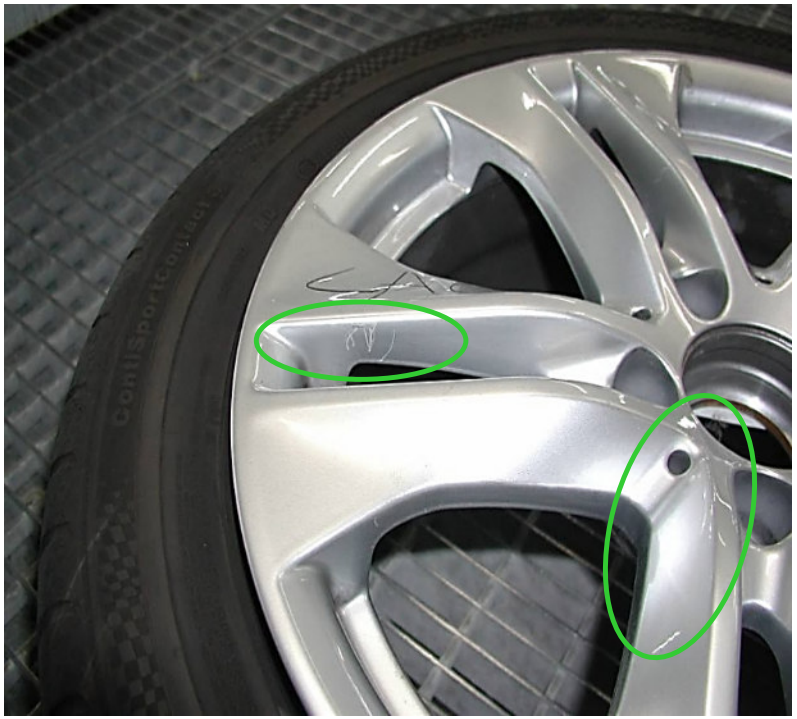
Damaged clear coat on exterior ring

= repair **not possible**!



EXAMPLES OF DAMAGE.

- Damaged paint on wheel face
  = repair **possible**.



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EXAMPLES OF DAMAGE.

- Damage deeper than 1 mm
  = repair **not permitted**!



EXAMPLES OF DAMAGE.

- Damaged paint on wheel face
  = repair **possible**.



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EXAMPLES OF DAMAGE.

- Damage to metal outside the 25 mm range.
  = repair **not permitted**!



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REPAIR PROCESS.







- Remove tyre, valve and weights. Depending on the type of damage, it may be sufficient to merely deflate the tyre to move the tyre away the rim flange into the well and cover it.
- Pre-cleaning inside and outside
  with soapy water, preferably with high-pressure cleaner.
- Re-cleaning inside and outside
  with cleaning agent, depending on degree of soiling, use Standox Silicone Remover 6600 or Standox Precleaner 6800.

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REPAIR PROCESS.



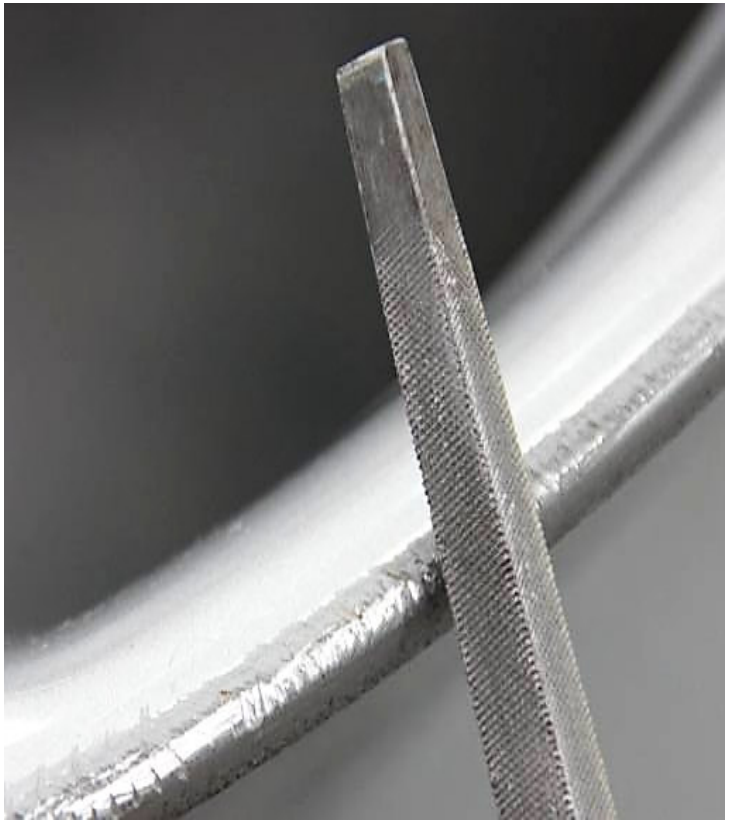
- A large number of Aluminium Alloy wheels are originally coated with an extremely light, fine silver metallic.
- Tip: Please check for colours using Standoblue MIX 221 Silk Silver Ultra Fine and Standoblue Effect Additive 8540.



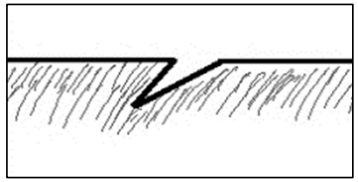


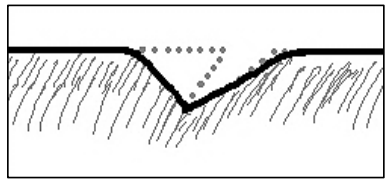
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REPAIR PROCESS.



- Deep, sharp-edged damage should be carefully deburred and rounded to reduce notching.
- The maximum permitted damage depth of 1 mm in the metal substrate must not be exceeded here.
- Prevent contact corrosion with iron/steel debris by using separate tools, sand afterwards and clean.





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REPAIR PROCESS.





- Machine sand damaged area with P180-P220 disc.
- Remove old paint for stopper/putty application.



- Create a smooth feather edge.



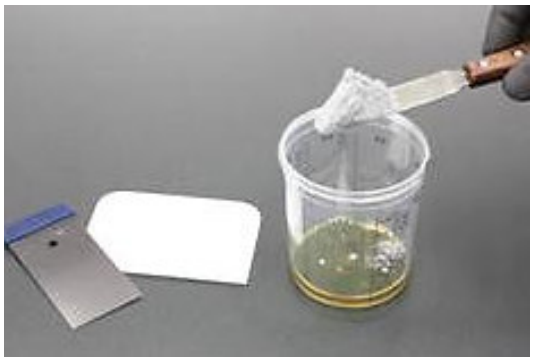


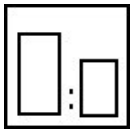
- Clean area using Standox Silicone Remover 6600.

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REPAIR PROCESS.









- Use DIAMANT plasticmetal Aluminium Putty Set.
- Mix and prepare according to the technical data sheet of the product being used.

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REPAIR PROCESS.







- Apply and dry DIAMANT plasticmetal Aluminium Putty according to the technical data sheet.



- Sand to shape using P120-P180 abrasive.



- Refine by machine sand P240-P320.
- Feather edge and adjacent area using P320-P400.

REPAIR PROCESS.





- Clean with Standox Silicone Remover 6600 or Standox Precleaner 6800.
- Mask for primer/filler application.
- Ensure to cover areas restricted for painting according to guideline e.g. Mercedes-Benz Service Information.

REPAIR PROCESS.

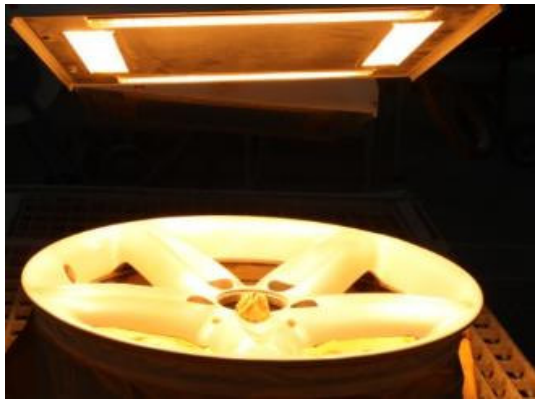


- Prime bare metal areas using either Standox Pretreatment Wipes U3000 or Standox Etching Adhesion Primer U3100. Flash off.



- Apply filler using Standox VOC Xtra Filler U7560 or Standox VOC Nonstop Primer Surfacer U7580.
- The application of Standox VOC Xtreme Filler U7600 is also possible, but only in combination with Standox Pretreatment Wipes U3000.

REPAIR PROCESS.

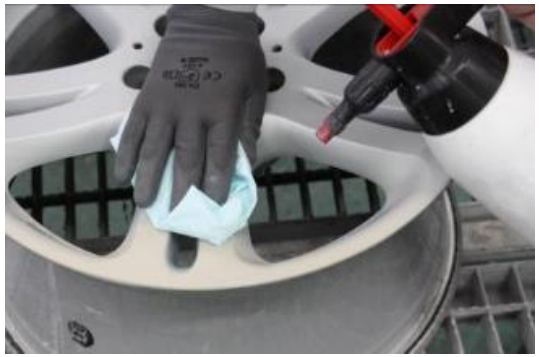




- Dry according to the technical data sheet of the product being used.



- Please refer to the restrictions re use of i.R.equipment, maximum temperature & time limitations – Slide 8.





- Machine sanding with P500-P600 disc.
- Hand sand edges and corners with P1000.



- Clean with Standox Precleaner 6800.

REPAIR PROCESS.



- Mask for basecoat/clearcoat application.

- Ensure to cover areas restricted for painting according to guideline e.g. Mercedes-Benz Service Information.



- Mix Standoblue Basecoat and apply according to the technical data sheet.

REPAIR PROCESS.



- When applying ultra fine silver colour using Standoblue MIX 221 and Standoblue Effect Additive 8540, the application of hardened ground colour is needed.
- Please follow recommendations provided by the colour software for the relevant colour formula being used.





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REPAIR PROCESS.





- Mix and apply Standox VOC Clear as per technical data sheet.



- Dry as per technical data sheet of the clearcoat being used.



- To achieve sufficient final hardness for tyre assembling, allow extra time for oven drying and/or IR drying.

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The Art of Refinishing.