



# LIGHT ALLOY WHEEL REPAIR

## 2024



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# INTRODUCTION



Wheels are highly 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.

# 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)).

# GUIDELINES



## Source:

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

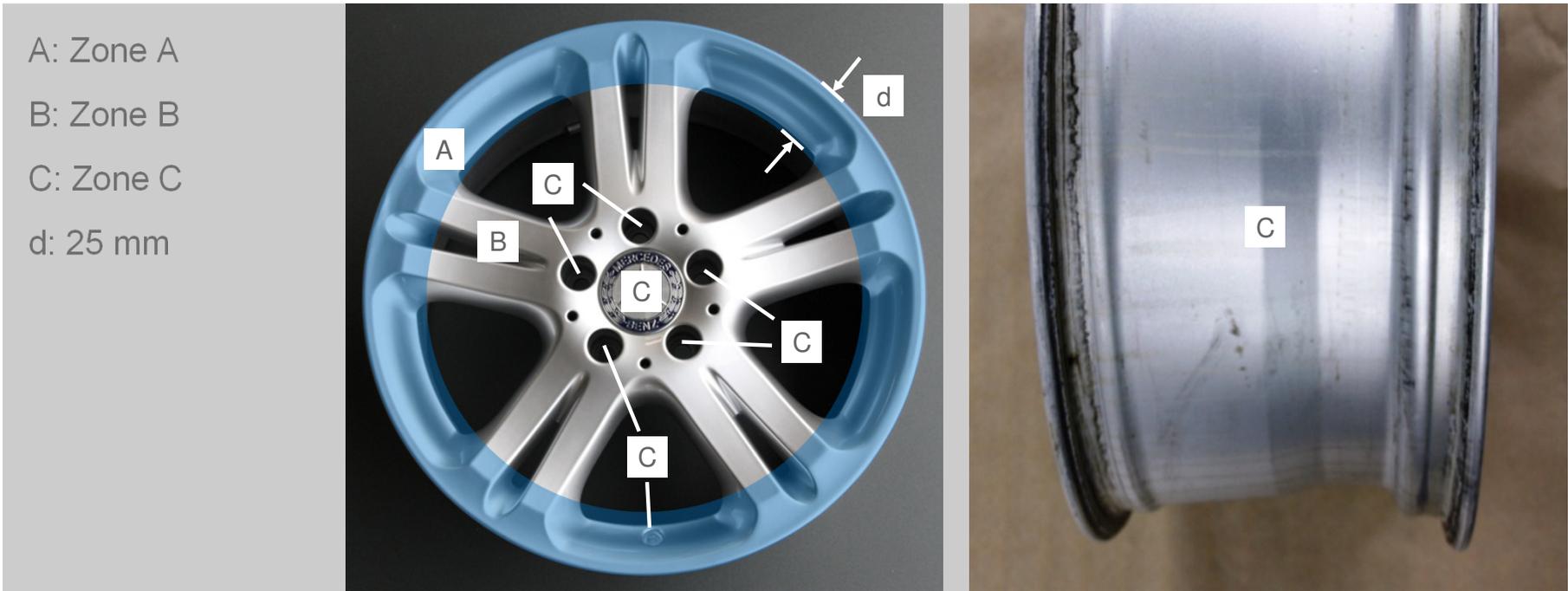
The restrictions on repair and preparation issued by the wheel manufacturer remain unaffected by these guidelines.

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.

# GUIDELINES

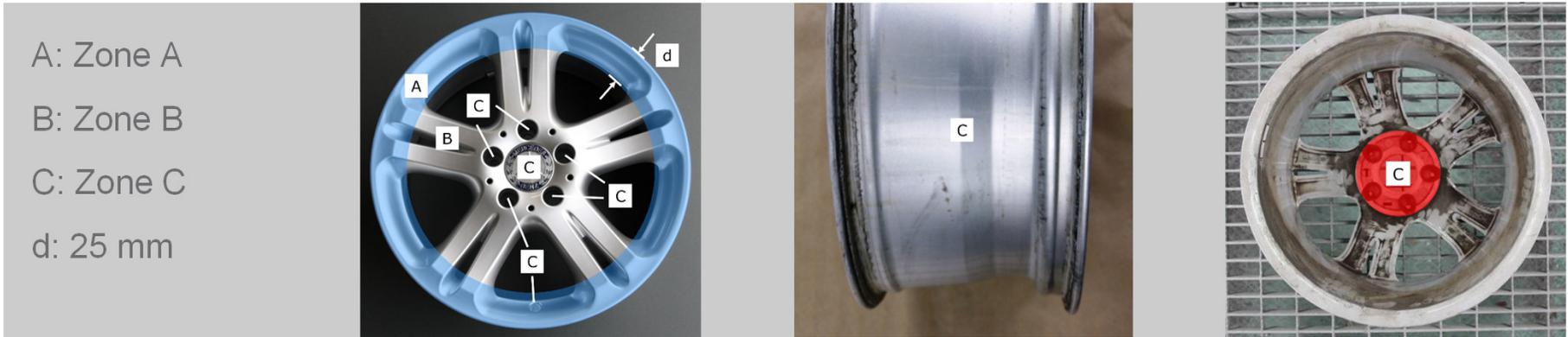
## ACCORDING TO MERCEDES-BENZ SI40.10-P-0026A



A: Zone A  
B: Zone B  
C: Zone C  
d: 25 mm

# GUIDELINES

## ACCORDING TO MERCEDES-BENZ SI40.10-P-0026A



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 $\leq 1$ mm, local machining and painting are possible.	Painting only.	None.

## **GUIDELINES**

### **ACCORDING TO MERCEDES-BENZ 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 °C 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)

## **GUIDELINES**

### **ACCORDING TO MERCEDES-BENZ SI40.10-P-0026A**



**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).

## **GUIDELINES**

### **ACCORDING TO MERCEDES-BENZ 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.

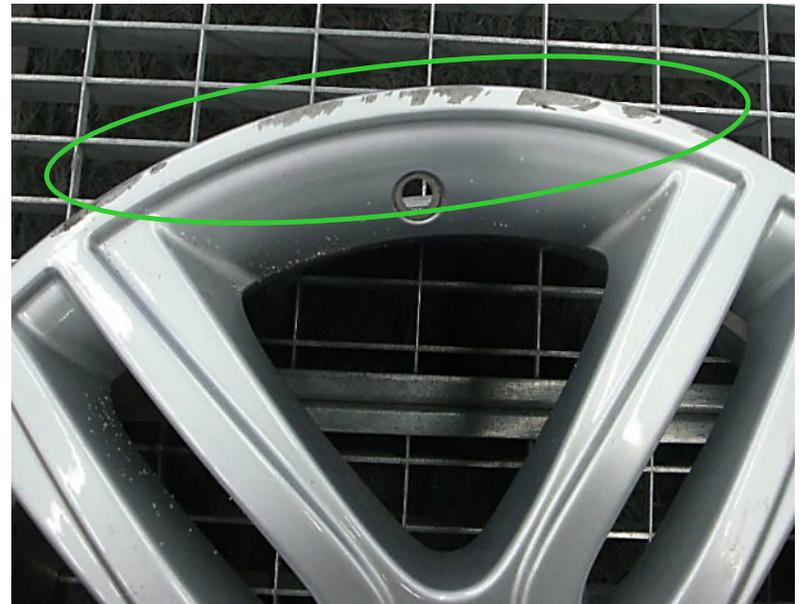
Further information on the surface treatment of light alloy wheels (guidelines) and approved materials can be found in the paint portal of the XENTRY Portal.

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.

## 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  
Speed 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  
Speed Repair is also suitable for straight forward paint  
repairs on the rim flange and edge.



## 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**.



## EXAMPLES OF DAMAGE

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



## EXAMPLES OF DAMAGE

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



## EXAMPLES OF DAMAGE

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



## 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 3920S Degreaser or 3911WB Waterborne Final Clean.

## REPAIR PROCESS



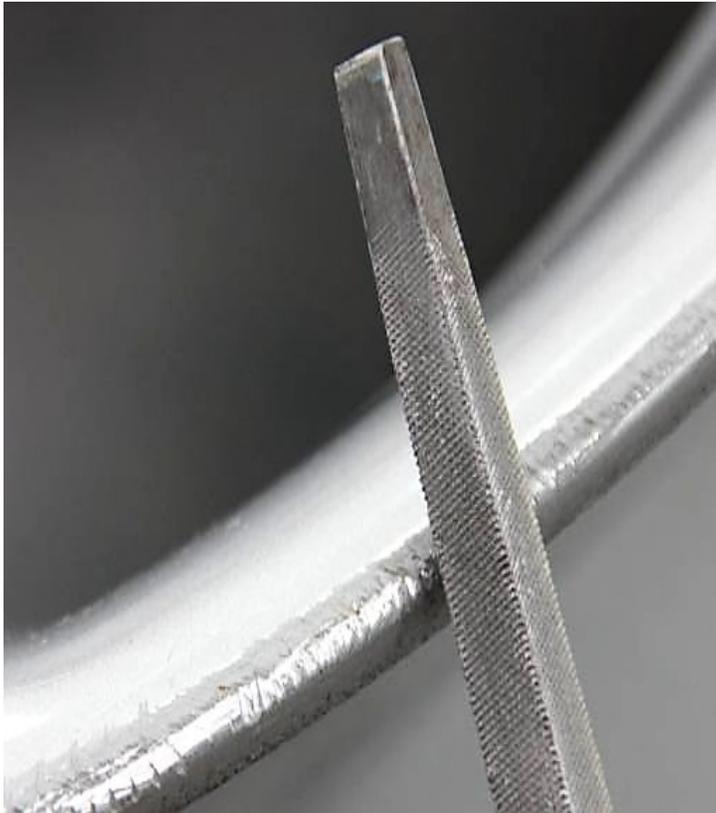
A large number of Aluminium Alloy wheels are originally coated with an extremely light, fine silver metallic.

Tip: Please check for colours using WB1738 Cromax® Pro Ultra Fine Bright Alu and WB2060 Cromax® Pro Effect Adjuster.



22 | AN AXALTA COATING SYSTEMS BRAND

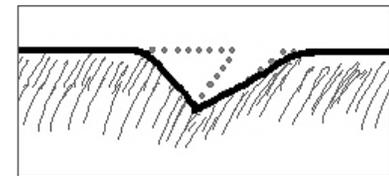
# REPAIR PROCESS



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.



# REPAIR PROCESS



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

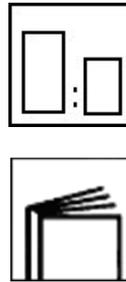


Create a smooth feather edge.



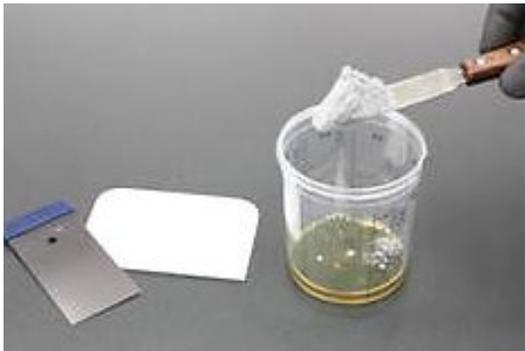
Clean area using 3920S Degreaser.

# REPAIR PROCESS



Use DIAMANT plasticmetal Aluminium Putty Set.

Mix and prepare according to the technical data sheet of the product being used.



## 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 3920S Degreaser or 3911WB Waterborne Final Clean.

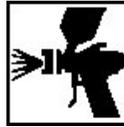


Mask for primer/surfacer application.



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

## REPAIR PROCESS



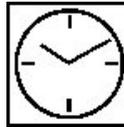
Prime bare metal areas using either PS1800 Metal Pretreatment Wipes or 635R Chromate Free Etching Primer.  
Flash off.



Apply surfacer using PS106x Cromax Pro Surfacers or NS260x Non-Sanding Primer-Surfacer.

The application of PS108x Ultra Performance Energy Surfacers is also possible, but only in combination with PS1800 Metal Pretreatment Wipes.

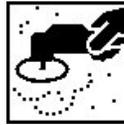
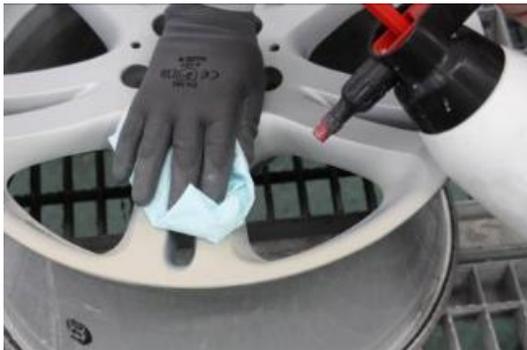
# REPAIR PROCESS



Dry accordingly 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 3911WB Waterborne Final Clean.

# REPAIR PROCESS



Mask for basecoat/clearcoat application.



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



Mix Cromax Pro Basecoat and apply according to the technical data sheet.

# REPAIR PROCESS



When applying ultra fine silver colours using WB1738 Cromax® Pro Ultra Fine Bright Alu and WB2060 Cromax® Pro Effect Adjuster, the application of hardened ground colour is needed.

Please follow recommendations provided by the colour software for the relevant colour formula being used.



# REPAIR PROCESS



Mix and apply Cromax 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.

