PAINTING OF ALUMINIUM ALLOY WHEELS CHARACTERISTICS AND TEST SPECIFICATION

E S 3.14

PEINTURE DES ROUES EN ALUMINIUM ALLIAGE: CARACTERISTIQUES ET SPECIFICATION D'ESSAIS
LACKIERTE OBERFLÄCHEN VON ALUMINIUMRÄDERN, MERKMALE UND PRÜFSPEZIFIZIERUNG

The following tests and specifications are recommended for aluminium alloy wheels. The actual testing procedure to be employed is subject to agreement between the vendor and the customer and dependent on what is considered appropriate to the application, may contain all or selected parts of these recommendations.

1 - COATING THICKNESS

Paint thickness should be appropriate for the style and visual appearance of the wheel whilst meeting the test-requirements herein described.

1.1 - RE-COATABILITY

The paint shall be oversprayable, without any pre-treatment, by use of special paint finishes, especially nitro-cellulose and alkyd resin enamels, without any surface modifications like swelling, softening and blistering or loss of adhesion

2 - COLOUR DEVIATIONS

The maximum permissible colour deviation from the approved test plate shall be < E * 1,0.
Chalking shall also be subject to inspection.
(Measurement according to ISO 3668:1976).

3 - DEGREE OF GLOSS

The maximum permissible deviation in Gloss from the approved test plate shall be < ± 5°.
(Measurement by reflectometer according to ISO 2813:1978)

4 - TEST AND VERIFICATIONS

4.1 - RESISTANCE TO CHEMICALS

The following resistance tests shall be made and certified for all paints without exceptions.

4.1.1 - **Brake fluid**
The test for resistance to brake fluid ATE SuperDot4 (Messrs.TEVES) shall be made according to VDA guideline 621-412 § 4.2.1.
(Not applicable for air-drying paints applied for repair purposes).

4.1.2 - **Gasoline**
The test for resistance to gasoline according to DIN 51604 part 1 shall be made according to VDA guideline 621-412 § 4.1.1
(Not applicable for air-drying paints applied for repair purposes).

Main changes compared to the last issue:

4.1.3 - **Engine oil**

The test for resistance to engine oil shall be made according to VDA guide-line 621-412 § 4.1.4.

4.1.4 - **Preservative agents**

The test for resistance to preservative agent 90 (Messrs. PFINDER NACHF. BÖBLINGEN) shall be made according to VDA 621-412 § 4.2.4.

4.1.5 - **Depreservative agents**

The test for resistance to depreservative agent P 3 Kaltin 7720 (Messrs. HENKEL) shall be made according to VDA guide-line 621.412 § 4.2.3.

4.2 - ADHESION

(Standards values as per table 1)

The adhesion of paints shall be tested by means of the cross-cut method according to ISO 2409:1972. Requirements: GT 0 - GT 1

4.3 - CORROSION RESISTANCE

(Standard values as per table 1)

All corrosion tests will be performed on the finished coated wheels.

4.3.1 - Salt spray test

Samples for salt spray testing shall be prepared according to ISO 7253-1984 and the test shall be made in the cycles listed in table 1 in accordance with DIN 50021 (salt spray) or DIN 50021 (Cass). Duration: 504 h or 240 h.

4.3.1.1 - Degree of surface corrosion

The evaluation of test 4.3.1 in view of the degree of surface corrosion shall be made according to ISO 4628-1:1982. Requirements: Ri 0 or Ri 0

4.3.1.2 - Degree of edge corrosion

The evaluation of test 4.3.1 in view of the degree of edge corrosion shall be made according to ISO 4628-1:1982. Requirements: KR0 or KR1

4.3.1.3 - Blistering

The evaluation of test 4.3.1 in view of the blistering shall be made according to DIN 53 209. Requirements: m0/g0 or m1/g1

4.3.1.4 - Moisture infiltration

The evaluation of test 4.3.1 in view of the moisture infiltration W_b shall be made according to DIN 53 167 § 8.1. Requirements: $W_b \leq 1$ mm or $W_b \leq 2$ mm

4.3.1.5 - Adhesion

The evaluation of test 4.3.1 in view of the adhesion shall be made according to ISO 2409:1972. Requirements: GT0-GT1 or GT0-GT1

4.3.2 - Tropical climate

The corrosion test in tropical climate shall be made according to DIN KK 50017 for the period stated in table 1. Duration: 360 h.

4.3.2.1 - Blistering

The evaluation of test 4.3.2 in view of blistering shall be made according to DIN 53 209. Requirements: m0 / G0

4.3.2.2 - Adhesion

The evaluation of test 4.3.2 in view of adhesion shall be made by means of the cross-cut method according to ISO 2409:1972. Requirements: GT01 / GT1

4.3.3 - Alternating corrosion test

The alternating corrosion test shall be made on the off-tool sample according to VDA guide-line 621-415. Requirements: 6 cycles

4.3.3.1 - Degree of surface corrosion

The evaluation of test 4.3.3 in view of the degree of surface corrosion shall be made according to ISO 4628-1:1982. Requirements: Ri 0

4.3.3.2 - Degree of edge corrosion

The evaluation of test 4.3.3 in view of the degree of edge corrosion shall be made according to ISO 4628-1:1982. Requirements: KR 1

4.3.3.3 - Blistering

The evaluation of test 4.3.3 in view of blistering shall be made according to DIN 53 209. Requirements: m 1 / g 1

4.3.3.4 - Moisture infiltration

The evaluation of test 4.3.3 in view of moisture infiltration W_b shall be made according to DIN 53 167 § 8.1. Requirements: $W_b \leq 2$ mm

4.3.3.5 - Adhesion

The evaluation of test 4.3.3 in view of adhesion shall be made according to DIN 53 151. Requirements: GT0 - GT1

4.4 - STONE CHIPPING TEST

Shall be performed on the finished coated wheel according to VDA draft proposal 621-927. Requirements: ≤ 3

TABLE 1

TEST ACCORDING TO POINT:	REQUIREMENT		CHARACTERISTICS
4.2	Gt 0 / Gt 1		Cross-cut
	Salt spray	cass	
4.3.1	504 h	240 h	Test time in hours
4.3.1.1	Ri 0	ri 0	Surface corrosion
4.3.1.2	KR 0	kr 1	Edge corrosion
4.3.1.3	m0 / g0	m1 / g1	Blistering
4.3.1.4	$W_b \leq 1$mm	$w_b \leq 2$mm	Infiltration WD
4.3.1.5	Gt 0	gt 1	Adhesion
4.3.2	360 h		Test time in hours
4.3.2.1	m0 / g0		Blistering
4.3.2.2	Gt 0 / Gt 1		Adhesion
4.3.3	6		Cycles
4.3.3.1	Ri 0		Surface corrosion
4.3.3.2	KR 1		Edge corrosion
4.3.3.3	m 1 / g 1		Blistering
4.3.3.4	$W_b \leq 2$ mm		Infiltration wd
4.3.3.5	Gt 0 / Gt 1		Adhesion
4.4	≤ 3		Stone chip