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(

salt- salt-spray(fog) test (ASTM B117-97)

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New method for sealing sulphuric acid anodized aluminium films

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ABSTRACT

Mixtures of ammonium acetate and ammonium tartrate in the presence of benzyl alkyl dimethyl ammonium chloride (benzalkonium chloride) were used for sealing sulphuric acid anodized aluminium.

Mixtures of ammonium acetate and ammonium tartrate exhibited synergistic sealing effect, which offered excellent durable corrosion protection to the surface coating formed by anodizing the aluminium alloy. Moreover the synergistic effect of benzalkonium chloride with tartrate offered boehmite free sealed surface coating.

Quality and durability of the sealed aluminium oxide films have been assessed using standard control sealing quality tests and well-known salt- spray (fog) test (ASTM B 117-97).

Key words: Aluminium, Anodized aluminium, Durability of aluminium surface coating, Synergistic sealing effect, Boehmite, Benzalkonium chloride.

.[1]

.[10-2]

[12-11]
.[15-13]

.[18-17] (aging)
[20-19]

[16]

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:

99.5% 6063 1
1.5A/dm² (180 g/l)

14-13µm

.10 cm x 5 cm x 3 cm

: 1 2

3min/µm

(96-94)

(> 99.6 %) (>99% , BDH) (+)

.(Fluka C14 - C12 50%)

.pH=5.78 (27%)

(1) (1) 21

(1)

1 3

(0.75 min/µm)

(0.7 g/l) (1.63 g/l)

(600 mg/l) (48 mg/l) (180 mg/l)

pH=5.78

(96-94)

3 4

(7 cm x 1 cm x 0.1 cm)

salt- spray (fog) test (ASTM 117 B-97)

(w/w) 5%

(lacquer)

3 2 - 5

(3 cm x 4 cm x 0.1 cm)

(w/w) 3.5 %

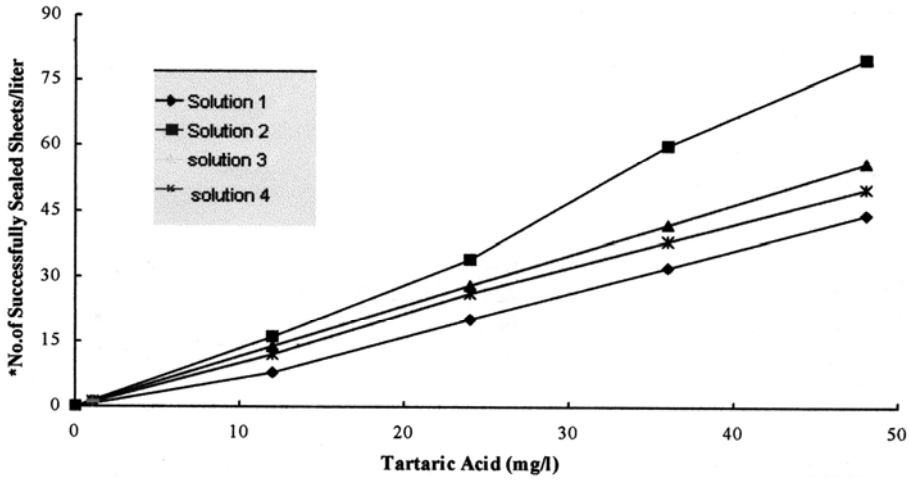
1

(SCE)

A Salartion 1286 electrochemical interface .
A Salartion 1250 frequency response analyzer.

(1)

رقم المحلول	تركيز مكونات المحلول المدروس (mg/L)			عدد القطع *المعالجة التي اجتازت اختبارات**مراقبة الجودة القياسية اجتياز ا نجاحا من أجل لتر واحد من محلول الختم المدروس	الاستهلاك الكيميائي***من حمض الطرطريك لخم متر مربع من سطح الألمنيوم المؤكسد مصعديا (mg/m ²)
	حمض الطرطريك	حمض الخل	كلوريد بنز الكونيوم		
1	0	300	180	0	0
2	0	600	180	0	0
3	0	900	180	0	0
4	0	1200	180	0	0
1+12	12	300	180	8	100
2+12	12	600	180	16	50
3+12	12	900	180	14	57
4+12	12	1200	180	12	57
1+24	24	300	180	20	80
2+24	24	600	180	34	47
3+24	24	900	180	28	57
4+24	24	1200	180	26	62
1+36	36	300	180	32	75
2+36	36	600	180	60	40
3+36	36	900	180	42	57
4+36	36	1200	180	38	63
1+48	48	300	180	44	73
2+48	48	600	180	80	40
3+48	48	900	180	56	57
4+48	48	1200	180	50	64
5+48	48	600	0	9	355



(1)

.1 2 3 4

*

:

**

:

5 2 5-0) dye spot -1

(

(Aluminum Fast Red B3LWdye)

(Aluminum Blue 2LWdye)

(30 mg/dm²) acid dissolution -2

()

(20 μ s) KHz admittance -3

: 8 (1+12) 7 μ s 5mg/dm²
 12mg ***

$$0.12 \text{ m}^2 = 8 \times 0.015\text{m}^2$$

$$.100\text{mg/m}^2 = 12\text{mg}/0.12\text{m}^2$$

(1)

(4 3 2 1)

(48 36 24 12)

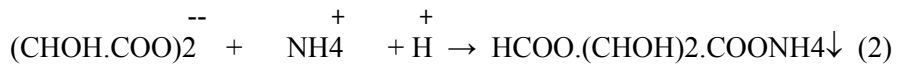
1200 900 600 300) (600)

(1) .(2+48) 80

(2+48) (2+48) (5+48)
 (5+48)

(III)

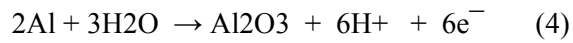
. [24-25]



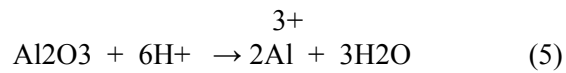
pH

[26] Wefers

:

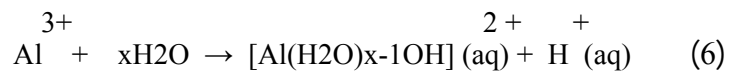


:



[27] Ernshaw Greenwood

(O—H)



pH

pH—
pH [28] Pourbaix
-3.8
pH pH 8.5
[1] 7-5.5
:
1,2,3 4,5,6
(2)

(solubilization)

[29] (Hart) AlOOH Al₂ O₃
(III)
(1) : OH-

80 (1)

180mg/l

salt- spray(fog) test (ASTM B 117-97) :

336

80

25

672

:

-1

-2

-3

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