

[A-Mekki super]

New zinc-aluminum alloy Galvanizing Technology

YASUNARI KIYOKAWA

Komagata Galvanizing co., Ltd Japan

Our company



- Our company was founded in 1927. In our 91 years history, we, KOMAGATA, have been trying to be a benefit to society.
- In the recent decade, we have been focusing on being environmentally friendly.
- We maintain high liquidity of zinc without using lead and we are creating an excellent galvanizing product.
- We named the technology [A-Mekki]. We started Galvanizing [A-Mekki] in 2010.
- We developed [A-Mekki super] with excellent corrosion resistance, the next stage of our company's history.
- The products that we galvanize are Structures, Building materials, Hardware, Fasteners and so on.

Exposure test by NEXCO, JGA

Tokuaigawa bridge



写真1徳合川橋(山側から撮影)

(Refer p15 of JGA news 76) - 2 -

Exposure test (Installation situation)



写真4 暴露試験片の設置状況(平成13年6月28日撮影)

(Refer p17 of JGA news 76)

Exposure test (Corrosion weight loss of galvanizing layer)

Exposure period	① Zn	Zn-1%Al	Zn-3%Al	② Zn-5%Al	Zn- 1%Al- 1%Mg	Zn- 3%Al- 1%Mg	③ Zn- 5%Al- 1%Mg
1 y	20	10	4	5	5	4	4
2 y	48	22	12	10	10	9	9
3 y	108	80	20	20	14	17	26
5 y	259	138	86	55	48	54	11
10 y	465	361	256	150	141	102	76
15 y	n.a.	n.a.	210	150	320	211	77

(Refer p25 of JGA news 76)



Zn-Al-Mg Liquid projection



(Melting point)

 AI-Mg alloy 	: 420 ° C
2 Zn-Al alloy	: 400 ° C
③ Zn-Mg alloy	: 340 ° C
4 Zn-Al-Mg alloy	: 340 ° C



Fluidized bed apparatus

[Alloy powder tank]



(Compressed air)

Flow meter





Analysis results by X R F (X-ray fluorescence analyzer)

Al-20Mg : $40\mu \sim 120\mu$

	80219-i-1		80303-p-1	
tickness	① 77.4 µ	2 108 µ	3 <mark>82</mark> μ	④ 63.1 μ
Zn	80.3075(±0.0737)	83.5667(±0.0761)	85.2122(±0.0776)	83.5813(±0.0758)
Fe	3.9801(±0.0196)	2.6372(±0.0161)	3.5578(±0.0186)	2.7977(±0.0165)
Sn	0.0467(±0.0023)	0.0368(±0.0023)	0.0305(±0.0019)	0.0370(±0.0020)
Bi	0.3177(±0.0088)	0.3101(±0.0090)	0.2887(±0.0088)	0.2883(±0.0087)
Pb	0.0000(±0.0006)	0.0054(±0.0048)	0.0071(±0.0050)	0.0228(±0.0051)
Cd	0.0011(±0.0006)	0.0010(±0.0007)	0.0015(±0.0007)	0.0013(±0.0006)
AI	10.6664(±0.0753)	8.4349(±0.0672)	8.1494(±0.0669)	9.4604(±0.0703)
Mg	4.6805(±0.1215)	5.0080(±0.1221)	2.7527(±0.1061)	3.8111(±0.1131)

Conclusion



- Our Zn-Al-Mg alloy galvanizing method is very new technology. It is currently under development.
- We will therefore make efforts to improve the quality.
- We believe that the new alloy galvanizing technology performance excels in sever corrosive environments.

We wish to express our gratitude for the cooperation of the Graduate School of Engineering, Industrial College of Technology, Osaka Prefecture university, in developing this technology.