

KAWASAKI STEEL GIHO

Vol. 23(1991) No.4

Characteristics of Galvannealed Steel Sheet Applied to Automobile Bodies

(Akira Yasuda)

Characteristics of Galvanized Steel Sheet Applied to Automobile Bodies



要旨

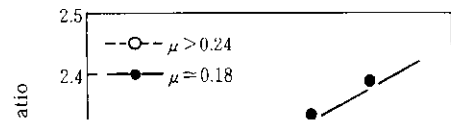
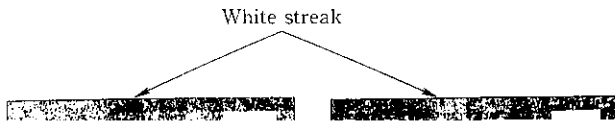
合金化溶融亜鉛めっき鋼板を自動車車体パネル用材料とするためには、種々の特性を改善する必要があった。プレス成形のために優れた機械的性質を得るとともに、スポット溶接の連続打点性を確保するためには Ti-Nb-B を複合添加した極低炭素鋼を基地鋼板とす

Table 2. Mechanical properties of steel for press formable columnar steel sheet

Steel	Processing conditions	YS (MPa)	TS (MPa)	El (%)	\bar{r}	Aging index (MPa)
Low C (0.050% C)	Batch annealing → CGL → Overaged (off-line) (700°C, 10h) (600°C) (320°C)	176	314	46	1.8	0
Low C (0.025% C)	High temp. coiling → CGL → Overaged (off-line) (680°C) (730°C) (320°C 6H)	176	314	45	1.6	0
Low C (0.025% C)	High temp. coiling → CGL → Overaged (in-line) (680°C) (730°C) (400°C 3 min)	196	323	43	1.6	39
Extra-low C IF	High temp. coiling → CGL (680°C) (800°C)	157	304	48	1.8	0

Table 3. Chemical compositions of steel for press formable columnar steel sheet

(%)



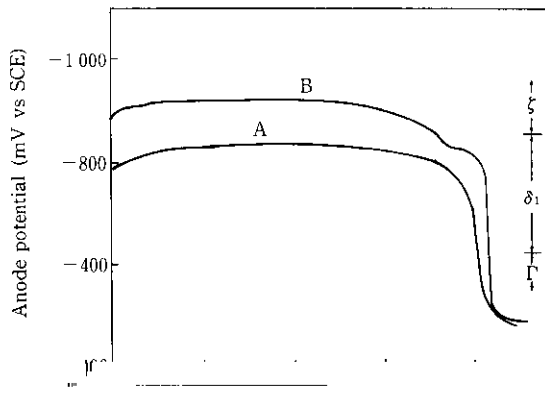
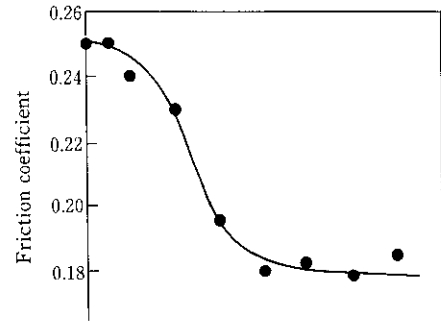


Fig. 5 Electric potential curves during anodic dissolution of galvanized coatings containing 11% Fe (A) and 8%



Fe-P alloy coating weight (g/m²)

Fe (B)

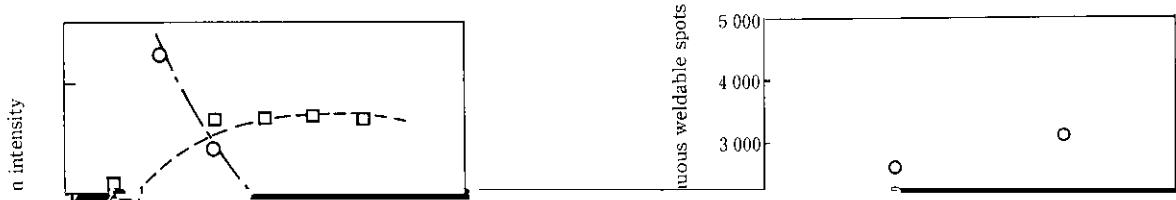
Fig. 6 Influence of Fe-P alloy coating weight on friction resistance of galvanized steel sheet

Table 3 Electroplating conditions of Fe-P alloy coating

Bath condition	Bath composition	Fe Total P	60~80 g/l 0.06~0.08 g/l
	pH		1.8~2.2
	Bath temperature		55°C

ス金型との摺動性改善効果を期待して、厳しいプレス加工が必要な一部の内板パネルにも使用される。

3 めっき密着性

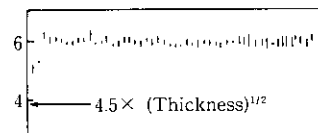



Galvannealing temperature (°C)
430 470 510 550

Fig. 10 Influence of galvannealing temperature on phase composition of galvannealed coating (Fe: 10%)

せる F 相の量は、Fe 含有率が 10% に保たれば、500°C 以下の加熱温度では変化せず、500°C 以上で急増する¹²⁾。したがって、500°C 以下の可及的に高い温度で合金化処理すれば、耐パウダリング

Fig. 11 Influence of sheet thickness on continuous spot weldability



Steel	Welding C_w f_w (kA) (s)	Number of continuous weldable spots					
		0	1 000	2 000	3 000	4 000	5 000
B-free extra low C steel	9.1 10/50						
	9.7 8/50	