

# 초 청 강 연 (V)

고품위 철강소재 표면처리 기술

이재룡/POSCO 기술연구소



# 표면처리 강재 제조기술 및 개발 동향

(Production Technology & Development Trends of Surface Treatment Steels)

POSCO 기술연구소 표면처리연구그룹 조두환, 이재룡\*

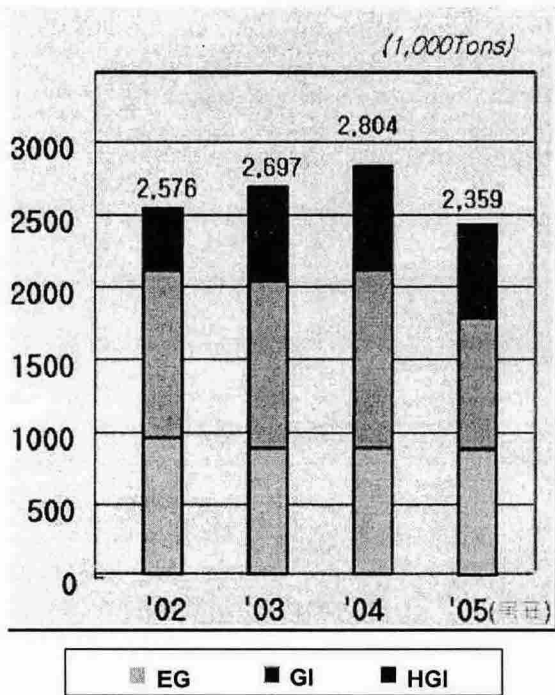
## ■ Situation of Environmental Regulation

Global Environ. Regulation	Customer
<ul style="list-style-type: none"> <li>● <b>EU : Hazardous Substance (Pb,Cr(VI),Cd,Hg)</b> <ul style="list-style-type: none"> <li>- <b>Change of Policy</b> Manufacture, Import → Process → Final product</li> <li>- <b>Final Production for Cr(VI) Element</b> Electronics → July 2006 ~(RoHS) Automotive → July 2007 ~(ELV)</li> <li>- <b>Recycle Regulations (ELV, WEEE)</b></li> </ul> </li> <li>● <b>Environmental Expenses</b> <ul style="list-style-type: none"> <li>- Cr(VI) Regulations (USA)</li> </ul> </li> <li>● <b>Connection of Trade and Environment</b> <ul style="list-style-type: none"> <li>- Kyoto Protocol</li> <li>- Ecolabel(EU), Blue Angel(German)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● <b>Green Purchase (N. Amer., EU, Japan, Korea)</b> <ul style="list-style-type: none"> <li>- Strengthen of Business Image</li> <li>- IBM, Fujitsu, Samsung etc.</li> </ul> </li> <li>● <b>Purchase of Cr-free Products in N. America, EU, Japan</b> <ul style="list-style-type: none"> <li>- from 2004 (Sony, Mitsubishi, Canon, Ricoh)</li> <li>- Certification of Quality</li> </ul> </li> <li>● <b>Purchase of Cr-free Products in Korea, China, Eastsouth Asia</b> <ul style="list-style-type: none"> <li>- Samsung Eco-Partner Policy</li> </ul> </li> <li>● <b>Supply of Cr-free Products in Japan Mill</b> <ul style="list-style-type: none"> <li>- Completion by 2005</li> </ul> </li> </ul>

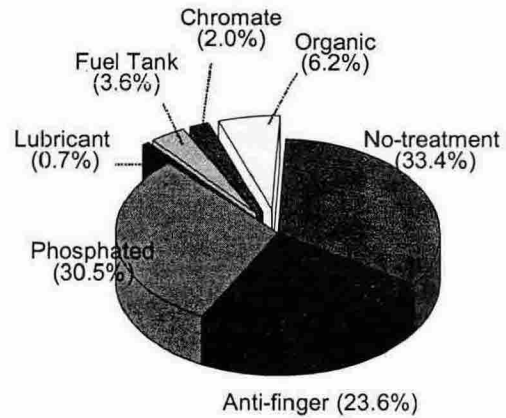


**Development & Supply of Eco-Friendly Cr-free Coated Product**

## ■ Production & Sales

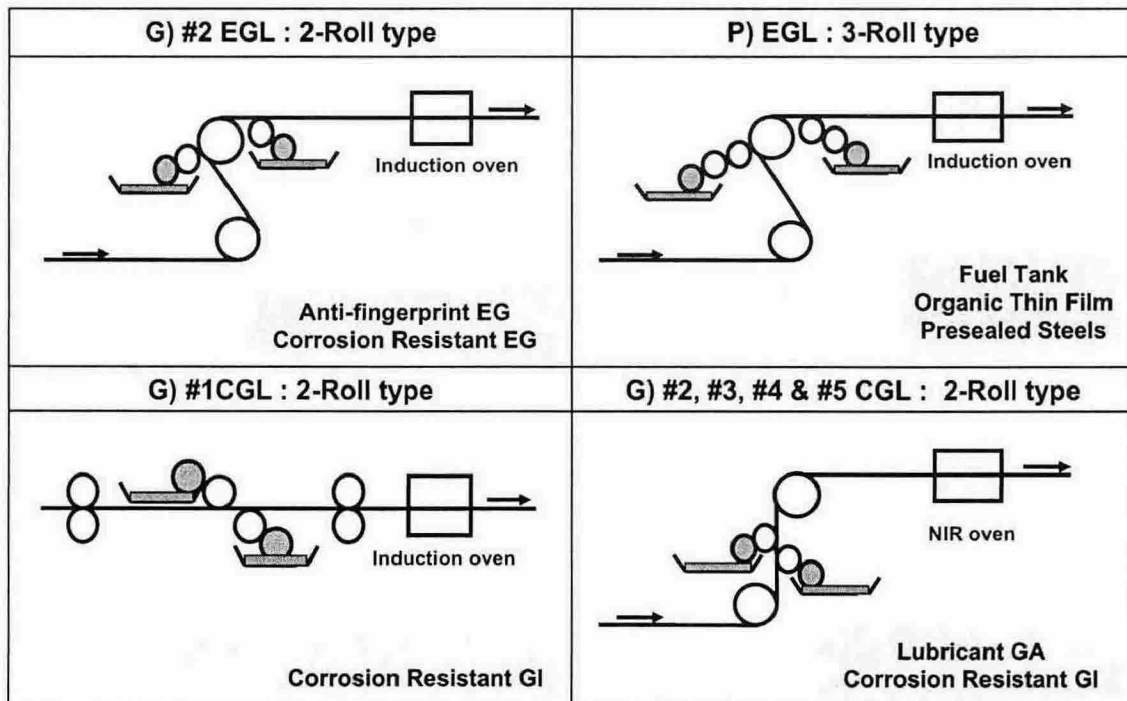


## Product Mix of EG ('04)

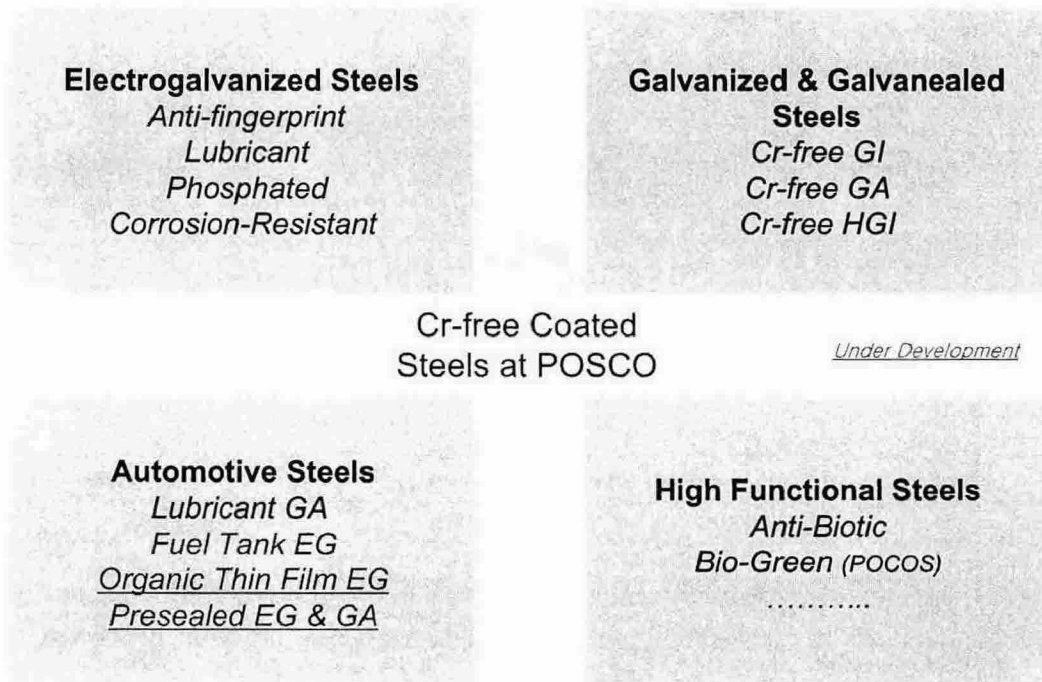


- EG Cr-free Conversion : 78.4%
- Completion of Cr-free Conversion : Dec. 2005

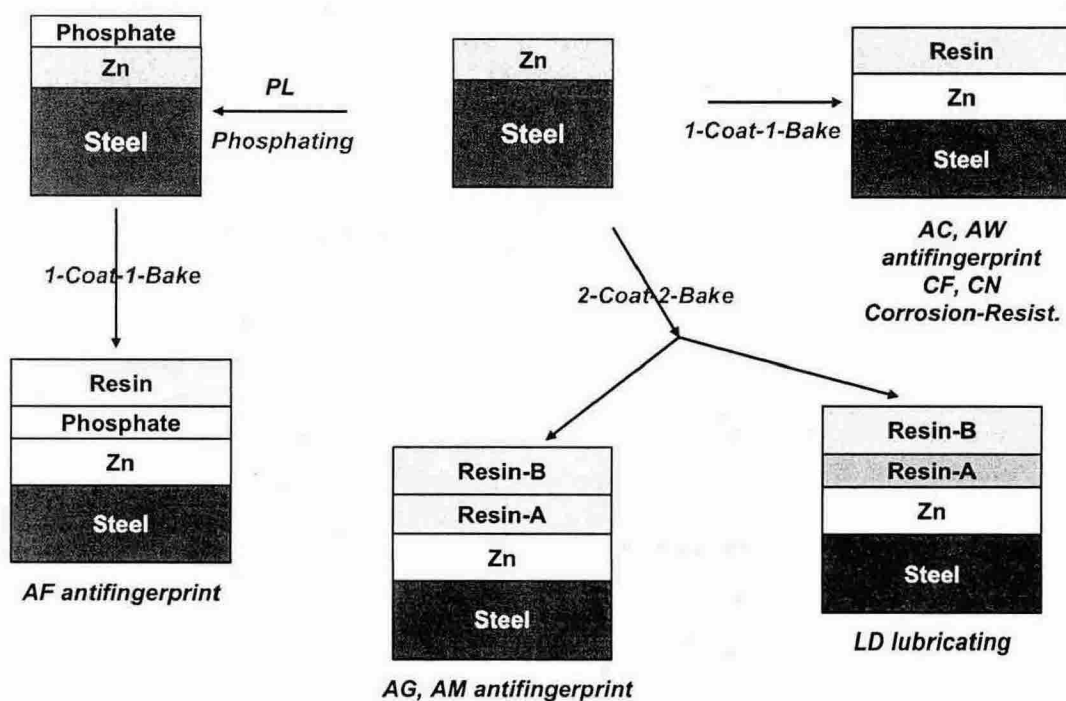
## ■ Roll Coater & Curing



## ■ Overview of Cr-free Coated Steels



## ■ Classification of EG Coated Steels



## ■ Anti-fingerprint EG (AF)

### • Scheme

Resin
Phosphate
Zn
Steel

Anti-fingerprint Product Applications



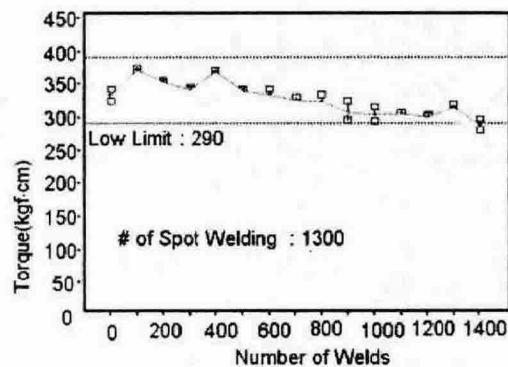
### • Details

Division	Components	Characteristics
Plating	EG	20g/m <sup>2</sup>
Phosphate	Dication(PL) or Trication(PM)	Good Color
Resin	Resin + Inorganic	Corr.-Resistant High Formability
Applications	Household Appliance (Computer, Decks & General uses)	

## ■ Anti-fingerprint EG (AC & AW)

### • Scheme

Resin	..... 1-Coat / 1-Bake
Zn	
Steel	

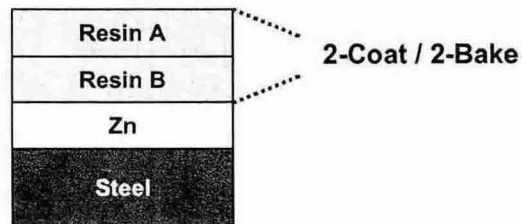


### • Details

Division	Components	Characteristics
Plating	EG	20g/m <sup>2</sup>
Resin	High Fuctional Resin	High Corr.-Resistant Good Weldable High Conductivity
Weldability	Spot Welding ≤ more than 1000	
Applications	Copier & Vending Machine, Household Appliance(Compuetr, Print)	

## ■ Anti-fingerprint EG (AG, AM & LD)

### • Scheme

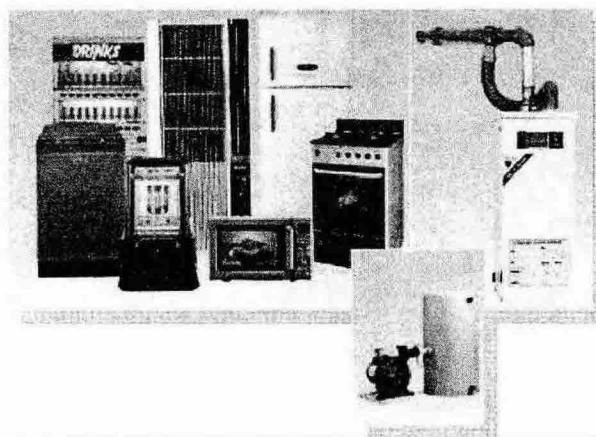
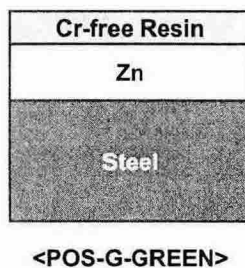


### • Details

Division	Components	Characteristics
Plating	EG	20g/m <sup>2</sup>
Resin-A	Cationic Resin	Good Drawing High Alkaline-Resistant Good Adhesion
Resin-B	Anionic Resin	Hydrophobic Good Acid-Resistant
Applications	Household Appliances (Motor Cover, Bearing & Clutch Housing)	

## ■ Cr-Free Coating GI (NC & NW)

### • Scheme

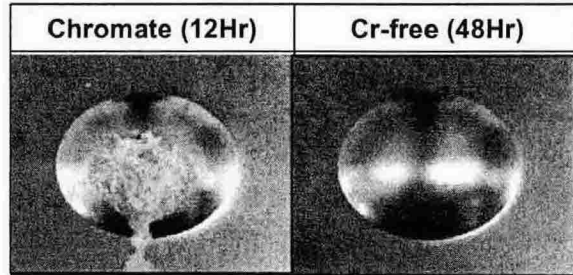


### • Details

- Dry-in-Place Cr-free Coating
- Resin + Inorganic Inhibitor
- Corr.-Resistant, Paint Adhesion
- Household Appliances, Automobile & Constructions

## ■ Cr-free Coating HGI (NH)

### • Scheme



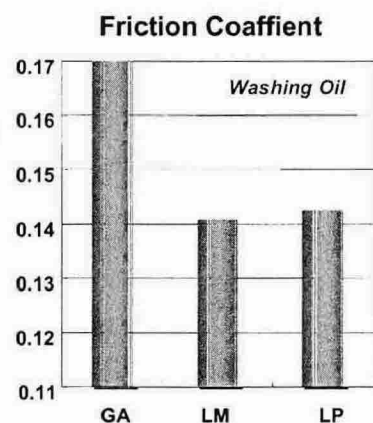
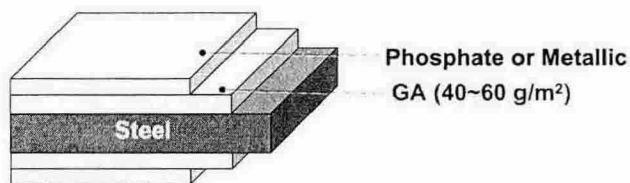
<Erichsen 6mm Test>

### • Details

- Cr-free Coating Using the existing Spray Facilities
- Inorganic Inhibitor Coating
- Constructions & Home Appliance

## ■ Automotive Lubricant GA (LP & LM)

### • Scheme



### • Details

Division	Components		Characteristics
Plating	GA (Fe 10~13%)		-
Lubriant	LP	Phosphated	Deep Drawing High Weldable
	LM	Metallic Coating	
Applications	Exposed & Unexposed Panels for Automotive Parts		



## ■ Concluding Remarks

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- ✓ POSCO has been successfully developed environmentally-friendly Cr-free coated steel sheets and will be completion of Cr-free conversion by this year.
- ✓ Cr-free coated steels *for household appliances* are comprise of phosphated, corrosion-resistant, anti-fingerprint & lubricant steels and *for automobile* are include lubricant, fuel tank, organic thin-film & presealed steels.
- ✓ POSCO will actively drive new coating technology and is trying to develop high functional coated steel products

- Thank You So Much -