

# DeKalb Metal Finishing

Progression of Trivalent  
Passivates

# 1<sup>st</sup> & 2<sup>nd</sup> Generation Trivalent Passivates

2<sup>nd</sup> Generation simply adds more (chromium, temperature, fluoride) to 1<sup>st</sup> Generation to increase NSST

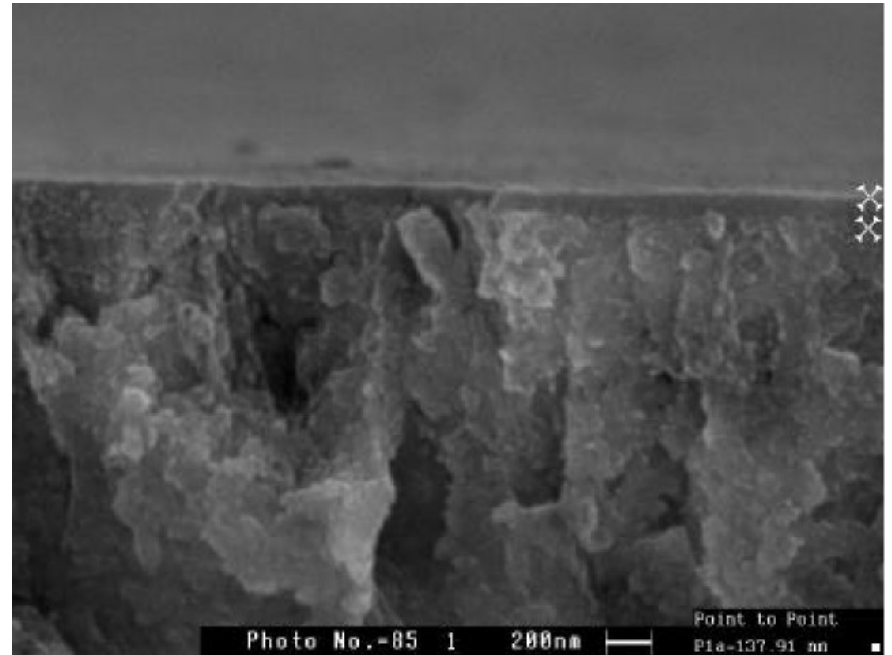
Thickness: 100 nm

Temperature: Ambient

Appearance: Clear/Blue

Corrosion Protection: 24-48 Hours to White Rust

Need topcoat (silicate, polymer, wax, etc.) to meet automotive requirements



# 3<sup>rd</sup> Generation “Thick Film” Passivates

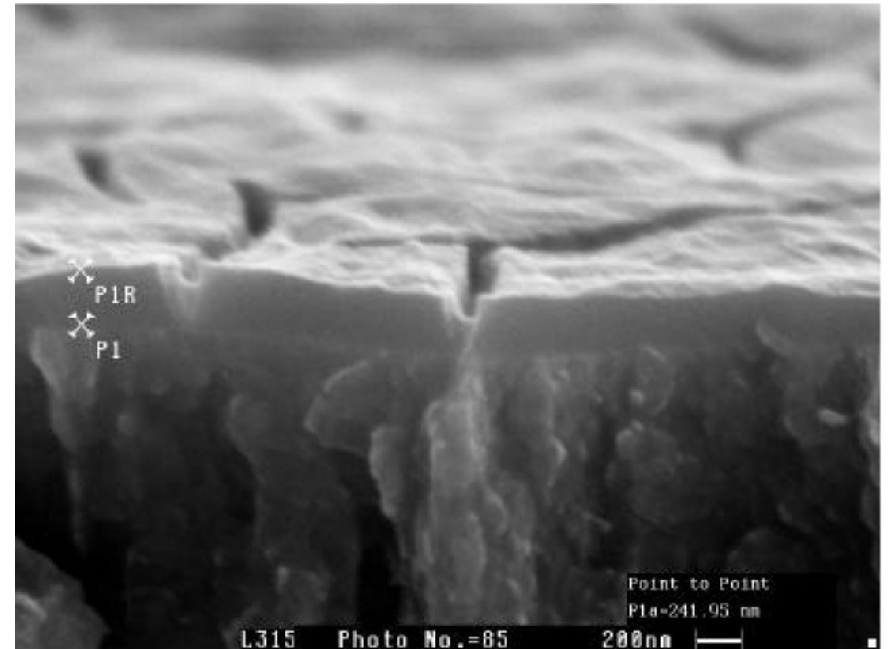
Base: Organic Acid

Thickness: 200-250 nm

Temperature: 60 C

Appearance: Iridescent Green/Yellow

Corrosion Protection: 168 Hours to  
White Rust



# 4<sup>th</sup> Generation “Thick Film” Passivates

Base: Nano-Particle

Thickness: 400-500 nm

Temperature: Ambient

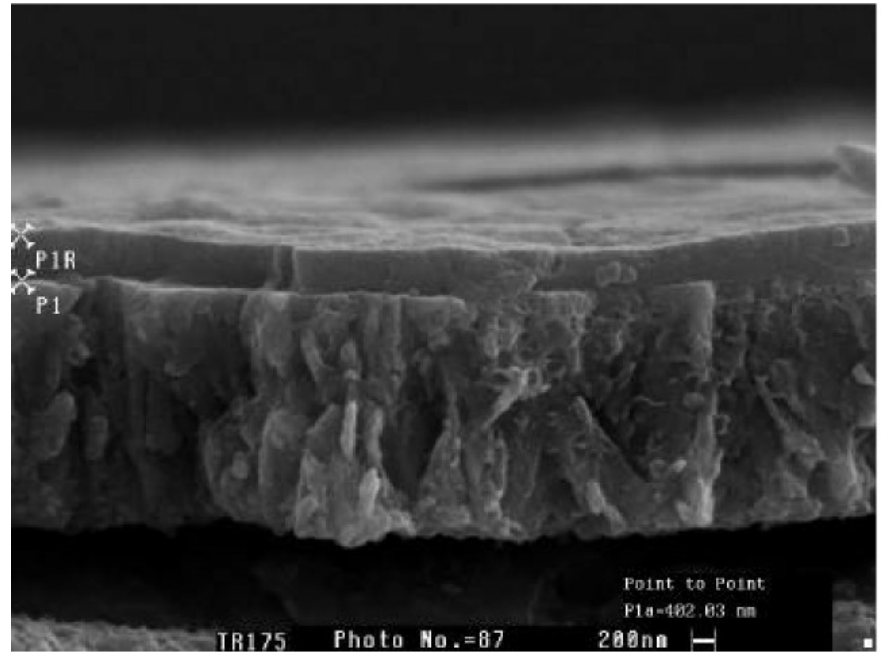
Appearance: Clear / Iridescent

Corrosion Protection: 250 Hours to  
White Rust

Self Healing

Excellent Heat Resistance

Consistent NSST Results



# Progression of CrIII Technology



**1<sup>st</sup> & 2<sup>nd</sup> GEN**



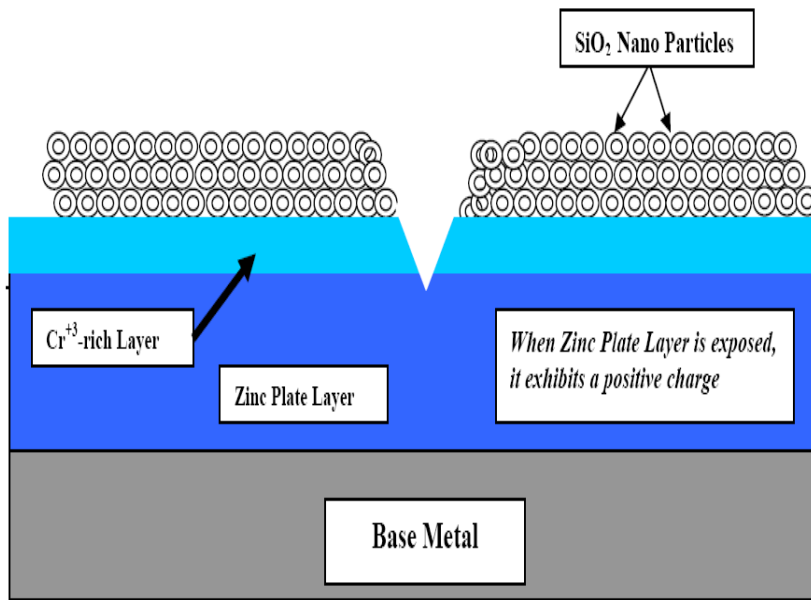
**3<sup>rd</sup> GEN**



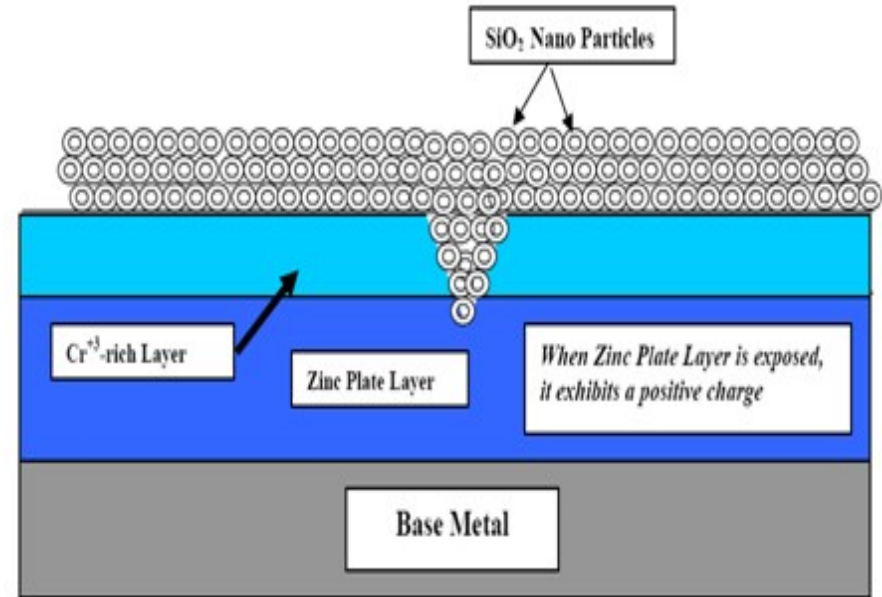
**4<sup>th</sup> GEN**

# 4<sup>th</sup> Generation Self-Healing Mechanism

Appearance Immediately After Passivate Film is Compromised:



Appearance After Passivate Film “Heals”:



Particles from the protective layer are negatively charged, and are attracted to the positively charged exposed Zinc. When they migrate to the scratch, they fill it in, thus automatically “healing” the defect.