Electronics & Industrial

Ecoposit™ Plastic Metallization

A sustainable future for plastic plating

Ecoposit™ Process Elements

1. Preparing the plastic surface

Chrome free etch

- REACH compliant surface conditioning

2. Full Body and 2-shot bimold catalyzation

Cataposit™ PM 957/PM 959

- Effective colloidal catalyzation of full body and 2-shot bimold parts

3. Making plastic conductive

Niposit™ Ammonia Free Electroless Nickel

Ecoposit™ Formaldehyde Free Electroless Copper

4. Next generation electrolytic copper

Ecoposit™ Electrolytic Copper

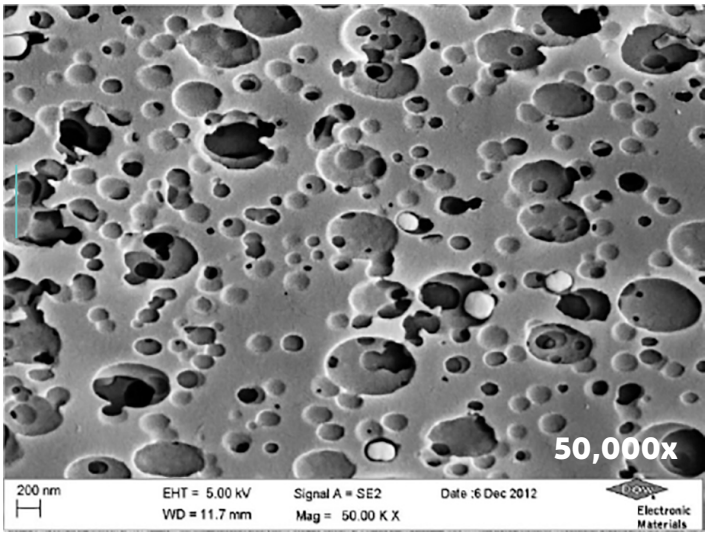
- Major advantages in metal distribution and stress reduction

Preparing the Plastic Surface

REACH Compliant
Ecoposit™ CF-800 Chrome Free Etching

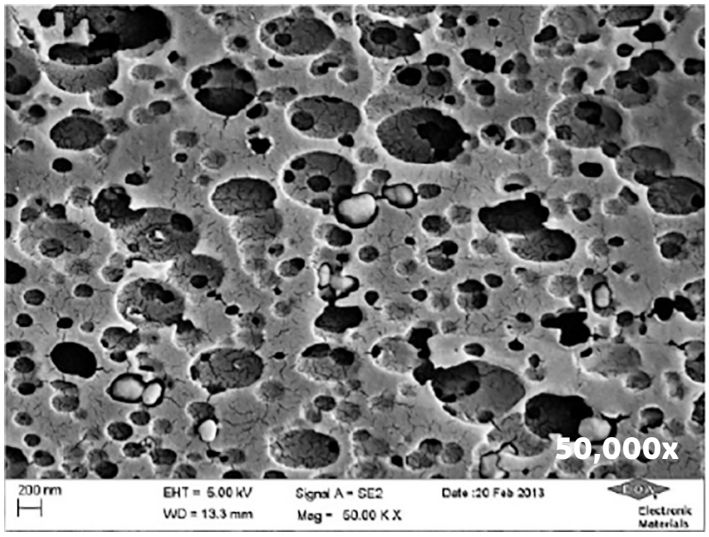
Cleaner PM-900	Conditioner PM-920	Ecoposit™ CF-800 Chrome Free Etch
All parts must be clean before processing	Some plastic requires a sweller stage for uniform etching	Chrome Free Etch. No neutralizer required

ABS: Cr(VI) Etch



The mechanism for both etches is the same, thus creating the familiar structure shown, resulting in the same performance as measured by peel testing, etc.

ABS: Ecoposit™ CF-800 Etch



- Oxidative removal of polybutadiene nodules
- Cavern formation
- Rough surface
- Mechanical anchoring of plated metal layers
- Adhesion

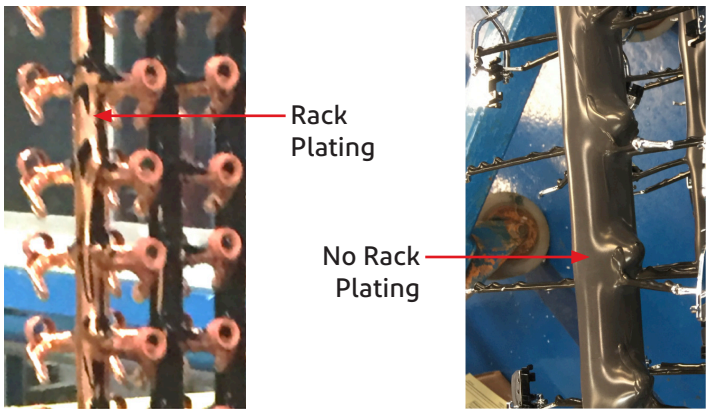
Cataposit™ PM-957 Catalyst – Effective Full Body Catalyzation

Etch	Cataposit™ PM-957 Catalyst	Accelerator PM-964

The catalyst design and properties define the capability of the plastic plating process. The Cataposit™ PM-957 colloid is designed for full coverage and excellent adhesion at the lowest palladium concentration.

Use of the correct accelerator is essential, to ensure appropriate catalytic palladium exposure, as well as avoidance of over-plating.

When the prior stages are operated to specification, avoiding degraded function due to contamination, the catalyst displays very long bath life with stable performance.



Cataposit™ PM-959 Catalyst – Selective 2-shot Bimold Catalyzation

Etch	Cataposit™ PM-959 Catalyst	Accelerator PM-964

Two-shot bimold parts are commonly used for interior body parts, where one plastic must be fully plated and the other not plated. This precise selectivity requirement demands a process designed to deliver selective plating, with an effective working window.

The etch structure must be delivered at the etching stage. Poor structure or contrast is never solved further down the line.

The selection of catalyst and accelerator however, is the most critical decision in delivering a capable 2-shot POP process.

Cataposit™ PM-959 with Accelerator PM-964 allows the necessary amount of palladium on the platable part, while keeping the non-plated part free of metallization.

Many complex parts are emerging, such as interior lighting panels, where high quality selective plating is mandated.

Niposit™ PM- 988 Ammonia Free Electroless Nickel

Cataposit™ PM-957 Catalyst → Accelerator PM-964 → Niposit™ PM-988 Electroless Nickel

Ammonia based electroless nickel has been the dominant choice for conductive seedlayer formation for most of the POP history. However ammonia is an irritant and a metal complexor causing waste management problems.

Eliminating ammonia from the POP factory is a very positive step anywhere in the world and we see significant momentum and desire for this change.

Niposit™ PM-988 Ammonia Free electroless nickel is installed and running in high volume production in Europe, the Americas and Asia.

Ecoposit™ XF-1000 Formaldehyde Free Electroless Copper

Cataposit™ PM-957 Catalyst → Accelerator PM-964 → Ecoposit™ XF-1000 Electroless Copper

Electroless Nickel is used by the majority of plating on plastics companies

- Low conductivity ca. 8-10 Ω.cm
- 2-stage seedlayer formation
- REACH Candidate list substance
- Hypophosphate DEA regulated
- Phosphate waste restriction
- Contains ammonia

→ Not Sustainable

Electroless Copper solves all the above, but contains formaldehyde

- Contains formaldehyde
- Creates methanol

→ Not Sustainable

The Ecoposit™ XF-1000 resolves the formaldehyde problem, while delivering all the advantages of electroless copper.

- No formaldehyde
- Higher conductivity
- Shorter process
- Line space/capacity gain
- No ammonia
- No phosphate
- No boric acid

Ecoposit™ 95HT Next Generation Electrolytic Copper

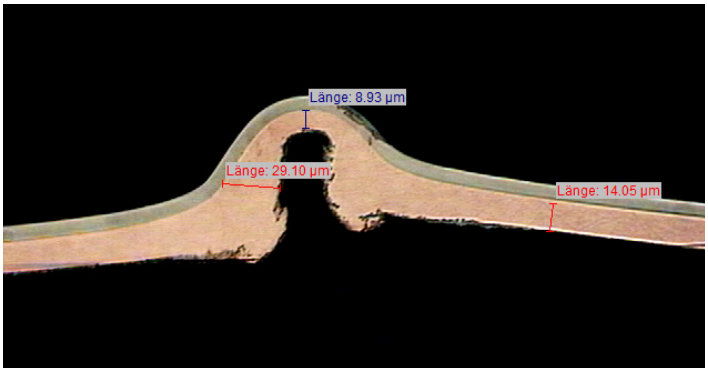
Often overlooked, but critical to the performance of plated parts and plant capacity, efficiency, capability and cost.

The "low cost" dyed brighteners used throughout POP history, typically exhibit very low throwing power, poor metal distribution and high deposit stress.

Ecoposit™ 95HT Electrolytic Copper is designed for excellent throwing power, improved metal distribution and low stress.

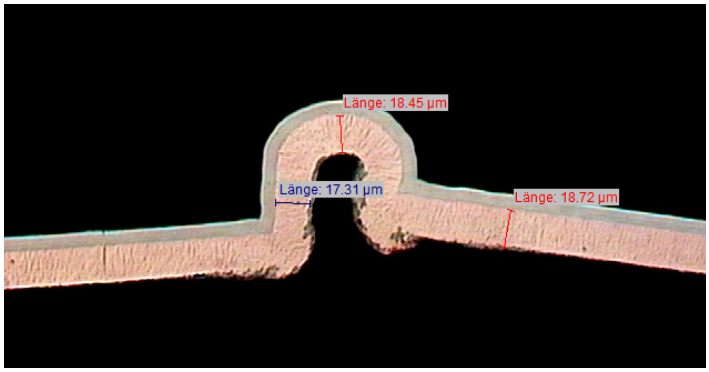
This minimizes plating times to achieve the customer specifications in recessed areas, saving time, capacity and cost, while delivering higher performance due to uniform distribution and lower stress.

Traditional

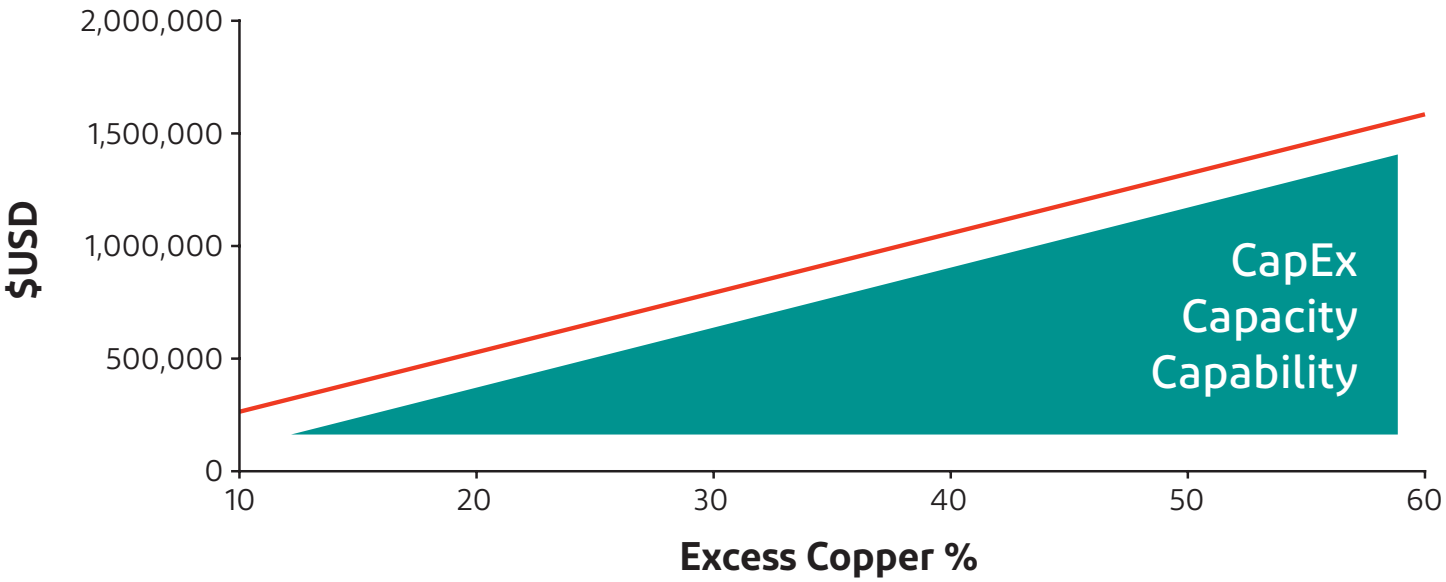


Poor copper throwing power

Ecoposit™

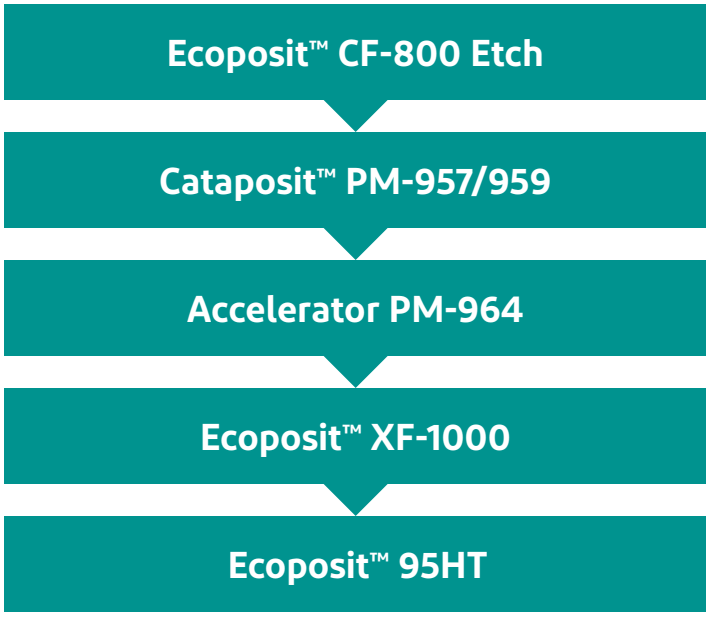


Excellent copper throwing power



Ecoposit™ Plastic Metallization – Sustainable POP

Ecoposit™ Plastic Metallization process incorporates novel products and know-how to eliminate regulated and toxic substances, while improving the capability to plate complex parts, including bimold, offering users reduced cost.



Ready for the future of POP

- Formaldehyde Free
- Single Stage - no strike
- 2-shot molding compatible
- Chrome free etch compatible
- No ammonia, phosphate or borate

About DuPont Electronics & Industrial

DuPont Electronics & Industrial brings a unique depth and breadth of knowledge, applications and technical expertise, and product portfolio to address customers' needs for connectivity today and in the future.

Our drive to provide our customers with industry-leading innovation is complimented by large scale, best-in-class manufacturing capability, and a team of scientists with deep materials science expertise to make next generation technology a reality for our customers.

With research centers and manufacturing operations located close to our customers in the U.S., China, Taiwan, Korea, and Japan, we pride ourselves on a customer-centric view to ensure we support our customers' success.

At DuPont Electronics & Industrial, we're bringing a whole new world into view.

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