



# Future Coat Technology

## **NANO COPPER 66M**

- **NANO COPPER PLATING PROCESS**
- **Process Characteristics**

**NANO COPPER P-66 is a Nano Copper – based copper plating process that produces low –stressed ductile. And additive are designed to operate at alkaline medium with excellent throwing power. It can be used on both properly prepared metals and plastic substrates.**

**The outstanding characteristics of the NANO COPPER P-66 Bright copper process are:**

- **Good deposit brightness with excellent speed for brightening and leveling with no loss of ductility.**
- **Ease of bath maintenance and control under production conditions.**
- **Addition agents are dosed on an ampere-hour basis**
- **Totally free from cyanide base chemical**

### **NANO COPPER P-66 PLATING PROCESS :**

<b>BATH COMPONENT</b>	<b>RANGE</b>
<b>TPP SALT</b>	<b>230 GM/LTR</b>
<b>CPP SALT</b>	<b>70 GM/LTR</b>
<b>AMINO BRIGHT</b>	<b>3.8 ML/LTR</b>
<b>PL 66 M</b>	<b>2 ML /LTR</b>
<b>PL 66 B</b>	<b>.2 ML / LTR</b>

## **MAKE UP**

- 1** In a separate storage or mixing container made of PVC or mixing or polyethylene, dissolve the required amount of Nano Copper salt in half the total volume of deionized water required. To accelerate dissolution, the water may be heated 40-50° C.
- 2.** When the NANO COPPER SALT had dissolved, add 0.2 kg/100 liters or low sulfur, plating grade activated granular or powdered carbon. It should be added and allowed to react for about one hour while stirring continuously.
- 3.** Filter the solution into the clean tank and make up about 90-92% of the final volume with deionized water. The filtration process must be performed with extreme care, since particles or carbon in the plating bath can cause matte or rough copper deposits. When using the filter for continuous filtration, it should be carefully cleaned or carbon particles. Filter cartridges and/ or filter paper must also be replaced.
- 4.** Carefully add the required amount of ammonia solution carefully while stirring vigorously. (caution safety glasses and protective clothing must be worn) During this step care must be taken if the temperature does not rise above 60°C.
- 5.** Add the required amounts of NANO COPPER P-66 Additives.
- 6.** Electrolyse the solution for 2 ampere-hour/ltr to achieve a level optimal brightness.

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## **NANO COPPER PLATING PROCESS**

### **Equipment**

- Tanks :** Mild steel with a hard rubber lining, or PVC Polyester reinforced material. If lined steel is used, the tank should be spark tested to assure that the linings are continuous.
- Heating Cooling:** Graphite, Stainless steel, Titanium, PTFE, PVC or Polyethylene. If metal is used It must be grounded or made anodic to prevent bipolarity on plated parts.
- Anode bags:** The anodes should be enclosed in bags made of acid resistant, fully synthetic Material such as polypropylene .

**Filter Aid Working parameters : Diamaceous earth.**

Operating variable	optimum	Range
Temperature	55°C	50-60°C
pH	9	8.8 – 9.5
P Ratio	6.8	6.4 – 7.5
Cathodic Current	3 A/dm	2-5 A/dm

**Agitation :** Cathode rod movement and / or air from a low pressure blower compressed air, no matter how well filtered , is unacceptable, A suitable material for the air sparging system is pvc.

**Filtration :** Continuous filteratration through 5 micron media is recommended. filtration . The turnover rate should 5-8 times per hour.

**Anodes :** OFHC Copper anodes are recommended.

**Ventilation :** Required, Refer to local standards for design requirements.

### **NANO COPPER PLATING PROCESS**

#### **Maintenance and Process Control.**

Nano copper is the source of copper metal plated out on to the work. It is important that the concentration of copper maintained with the recommended limits. The required mount of copper should first be dissolved I in an adequate volume of warm water and it should be added to the bath through the filter. Low concentration will cause high current density burning.

NANO COPPER salt increase solution conductivity and lowers the voltage required to plate at a particular current density. Low concentration will cause an increase in the operating voltage required to attain a given current density.

Ammonia works in combination with the Nano Copper P-66 additives to give bright, highly leveled copper deposits. Careful control of ammonia content is essential to optimum bath performance at high temperature. Ammonia concentration can be adjusted by using C.P.grade ammonia solution.

Nano copper P-66 brightener in order to achive optimal brightness/covering and leveling characteristics, Nano copper P-66 Brightener must be present in the bath in a certain ratio. The Nano P-66 Brightener can be controlled by plating 2 amps. 7 min, air agitated Hull Cell panels. The nano copper P-66 additives can be added directly the bath according to the following schedule, with vigorous stirring.

**Addition Agent**

**NANO COPPER -68**

**Addition per 1,000 Ampere Hours**

**BRIGHTENER**

**150 ( 10-200) ML**

**The consumption of Nano Copper P-66 Brightener depends on the degree of brightness and leveling required.**

**Evaporation losses should be replenished with distilled or fully deionised water.**

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