

Black Hole Plating Solution (Cabot VULCAN XC72)

(2012 – Final)

Ingredients

1. **Cabot VULCAN XC72 Carbon Black**
 - **2-5g per liter** (Start with 2g and eyeball it based on adhesion)
 - [eBay Link](#)
 2. **Surfactant** – Helps dispersion and wetting of vias
 - **1-2 mL of Triton X-100** (or **0.5-1g of SDS**)
 3. **Binder** – Helps adhesion of carbon black to the PCB
 - **1-2g of Polyvinyl Alcohol (PVA)**
 4. **Dispersing Agent** – Prevents carbon black from clumping
 - **0.5-1g of sodium polyacrylate** (can also use **ammonium polyphosphate**)
 5. **pH Adjuster** – Keeps solution stable and promotes adhesion
 - **Ammonia (pH 9-10 ish)** – Adjust if you see settling
 6. **Deionized Water** – Carrier for the suspension
 - **1 liter total volume**
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Preparation Steps

Step 1: Carbon Black

1. **Weigh 2-5g of Cabot VULCAN XC72.**
2. **Mix it in 500mL of deionized water.**
3. Put in **liquid grinder mixer** for at least **24 hours** to ensure fine dispersion.
4. Add **0.5-1g dispersing agent** while mixing to stabilize the dispersion.

Step 2: Add Surfactant

1. Add **1-2mL Triton X-100** (or **0.5-1g SDS**).
2. Mix for **10 minutes** to ensure proper wetting.

Step 3: Binder

1. Dissolve **1-2g of PVA in warm water.**
2. Add it **slowly** while mixing to avoid clumping.

Step 4: pH Adjustment

1. **Measure the pH** of the solution.

2. If needed, **add ammonia dropwise** until pH reaches **9-10**.

Step 5: Final Dilution

1. Add **deionized water** to bring the total volume to **1 liter**.
2. Mix for **15 minutes** to ensure uniform dispersion and Ph balance if any settling