

## Electro-conductive coatings - tests and outcomes

In order for the electro-deposition process to occur it is necessary that the mandrel or base-form has a surface that is capable of conducting an electrical current. If a non-conductive material is used then this must be rendered conductive with the application of an electro-conductive coating.

A number of electro-conductive materials have been trialed as part of the research and the results are laid out in the table 1.

Each coating was tested on a standardized cast wax oval and placed in the electroforming tank for a period of 4 hours at a setting appropriate for a slow and even electro-deposition to occur.

### CONCLUSIONS

The final choice of electro-conductive coating was dependent on the nature of the form to be electroformed. For simple rounded forms copper paint was used as this was the easiest to apply, less expensive than the silver based coatings and consistently effective. For openwork pieces Entreat T9058, applied with a fine brush, was used. For fine detailed pieces the Silver flake FS2 or airbrushed Entreat T9058 proved to be the most effective.

Table 1

Electro-conductive coating	Cost	Application method	Effectiveness	Advantages	Disadvantages	Additional notes
Silver spray Entreat T9058	High	Sprayed with airbrush	Good	Thin but good layer easily achievable. Good for objects with a detailed surface	Spraying is wasteful Airbrush clogs easily	
Silver paint Entreat T9058	High	brush	Good	Good for creating tracery or openwork electroformed objects	Must be constantly stirred or less effective	
Water-based electro-conductive copper paint	Medium	brush	Good	Easy to apply and has good conductive qualities	Rather thick so can clog detail	Put through 200 mesh sieve before use otherwise rather bitty
Dendritic copper powder 300 mesh std	Medium	Fine dry powder brushed onto surface. Fine particles adhere to the surface without the addition of a binder	Satisfactory	Due to the absence of a binder a very thin electro-conductive coating is possible which will not clog detail	Sticks best to glossy surfaces such as wax. Coated objects need to be handled as little as possible	
Graphite powder 200 mesh applied over a layer of spray..... varnish	Low	Sprayed with varnish and then dipped into powder	Satisfactory	Cheap and easily available	The granular nature of the powder results in an uneven surface to the electroform. Uneven build up can occur due to patches of non-conductivity	
Silver flake FS2	High	Fine dry powder brushed onto surface. Fine particles adhere to the surface without the addition of a binder	Good	Due to the absence of a binder a very thin electro-conductive coating is possible which will not clog detail	Sticks best to glossy surfaces such as wax. Coated objects need to be handled as little as possible	A small amount of the flake comes away from the object as it is put in the bath, this gathers around the lead wire and is itself electroformed

