



# ACQUIRING COPPER SULFATE SOLUTION FOR ANALYZING ELECTRODEPOSITED ZINC COATINGS ON STEEL



# Acquiring Copper Sulfate Solution for Analyzing Electrodeposited Zinc Coatings on Steel

## Scope

This document is a resource for customers of UL's product safety certification services for the U.S. and Canadian markets using the UL Mark for the United States or C-UL Mark for Canada. The customers benefitting most from this information are those whose Follow-Up Services (FUS) procedure or applicable UL Standard – UL 1, 4, 6 (CSA 22.2, #45.1), 13, 209, 360, 797 (CSA 22.2, # 83.1), 1072, 1242 and 1569 – specifies use of copper sulfate solution to conduct zinc coating tests at a manufacturing facility for verification that electrodeposited zinc coatings on steel comply with UL requirements.

### Acquiring copper sulfate solution

The required copper sulfate solution can be acquired for use at a factory by ordering it from a commercial laboratory supply company, creating your own copper sulfate solution, or by ordering the copper sulfate solution through UL.

### Ordering copper sulfate solution from a commercial laboratory supplier

You can order copper sulfate solutions from many different commercial laboratory supply companies. When doing so, please specify in your purchasing documentation that the copper sulfate solution is to be made from distilled

water and reagent grade cupric sulfate, and is to have a specific gravity of 1.186 when measured at 18.3 °C. Also, specify that each container of copper sulfate solution is to be marked with the measured specific gravity, pH value and the bottling date. Please note that copper sulfate solutions mixed according to the methods described in the UL Standards noted above will typically have a pH value between 3.0 and 4.0.

Manufacturers are responsible for verifying – either through test or review of documentation furnished with the solution – that each incoming shipment of copper sulfate solution complies with purchase specifications. Records of this verification are to be made available to UL's field representative.





### Making copper sulfate solution

You can make your own copper sulfate solution using the ingredients and preparation method described in UL Standards and as specified in your UL Follow-Up Services Procedure.

The specific gravity of the final copper sulfate solution is to be 1.186 when measured at 18.3 °C. Please note that copper sulfate solutions mixed according to the methods described in the UL Standards noted above will typically have a pH value between 3.0 and 4.0. Records verifying these parameters are to be maintained by the manufacturer and made available to UL's field representative.

Each container of the copper sulfate solution is to be capped and labeled with its contents, measured specific gravity and pH value, and bottling date.

### Sourcing copper sulfate solution through UL

You can order copper sulfate solution through UL by contacting your local field representative who will complete an order form on your behalf. UL will invoice you for the costs to prepare and ship the solution to your location.

### Storing copper sulfate solutions

The solution is to be stored in a location where temperatures will not fall below 18.3 °C for any extended period of time. Temperatures appreciably below 18.3 °C will cause the copper sulfate to crystallize out of the solution. If there is any question

as to the appropriateness of the solution for use in the zinc coating test, you should conduct a specific gravity and pH check to determine that the solution remains within the required ranges.

For more information about ordering copper sulfate solution through UL, please contact your local UL field representative. For all other inquiries, please contact Customer Services at UL's Northbrook, Ill., office by phone at 1 877.854.3577 (if within the US and Canada) or +1 847.272.8800 Extension 49513 (if outside the US and Canada), or by email ([CEC.us@us.ul.com](mailto:CEC.us@us.ul.com)).

