

## Info 30 E - Precipitating Copper from wastewater

### GENERAL INFORMATION

TMT 15<sup>®</sup> is widely used in various industries that produce liquid wastes containing heavy metals. The heavy metals are usually removed from the wastewater by precipitation and flocculation.

Individual examples demonstrate the effectiveness of treatment methods in practice, and should give anyone interested enough background to perform tests to check the suitability of TMT 15<sup>®</sup> for their own particular wastewater composition. We would be happy to provide TMT 15<sup>®</sup> in sample amounts. Our Application Technology department is also prepared to provide assistance in finding solutions.

### PRINTED CIRCUIT TECHNOLOGY / COPPERTETRAMMINE COMPLEX

Treatment process:

- Collect 1 l of rinse water from the etching machine (1 g Cu/l, 12 g NH<sub>3</sub>/l, pH 8.1),
- within 20 minutes, add 18 ml of TMT 15<sup>®</sup> while stirring,
- add 2.5 ml of 0.1% nonionic flocculation aid (such as Praestol 2500),
- stir rapidly for 1 minute, slowly for 15 minutes (pH 8.4),
- separate orange-colored, coarsely flocculent precipitate by filtering.

The filtrate contained less than 0.07 mg Cu/l

### REMARKS

TMT 15<sup>®</sup> requirement: 18 l TMT 15<sup>®</sup> per kg copper (Cu)

The requirement can also be determined using the calculations found at [www.tmt15.com](http://www.tmt15.com).

For copper precipitation, it is usually necessary to adjust the pH value to the range 7-10 after the required chemicals have been added. To some extent, the precipitation result and residual metal content is strongly dependent on the pH value, depending on the type and concentration of complexing agents.

## AVAILABLE EXAMPLES

| TMT Info No. | Heavy metal               | Complexing agent                            | Branch                               |
|--------------|---------------------------|---|--------------------------------------|
| TMT Info 30  | Copper (Cu)               | Tetrammine                                  | Printed circuit board<br>Manufacture |
| TMT Info 31  | Copper (Cu)               | EDTA complex                                | Printed circuit board<br>Manufacture |
| TMT Info 32  | Cadmium (Cd)              | Tetrammine                                  | Electroplating                       |
| TMT Info 33  | Silver (Ag)               | Thiosulfate complex                         | Photografic rinse water              |
| TMT Info 34  | Silver (Ag)               | Thiosulfate complex                         | Photografic concentrate              |
| TMT Info 35  | Mercury (Hg)              | Chlorocomplex                               | Chemical industry                    |
| TMT Info 36  | Nickel (Ni)               | Polyamine complex                           | Electroplating                       |
| TMT Info 37  | Lead (Pb)                 | Cataphoretic<br>electro-deposition of paint | Automotive industry                  |
| TMT Info 38  | Copper (Cu) & Nickel (Ni) | Actual wastewater                           | Printed circuit board<br>Manufacture |

### Disclaimer

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