

## TMT 15<sup>®</sup> - Precipitating Nickel from Wastewater

### Case Study / Info 36 E

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.

#### Electroplating / Nickelpolyamine complex

Treatment process:

- Collect 1 l of rinse water from the currentless Nickel bath (144 mg Ni/l, pH 6.5),
- adjust to pH 12 using 5 ml of 20% caustic soda
- add 2.9 ml of TMT 15<sup>®</sup> while stirring,
- add 2 ml Aluminum sulfate solution (5 g Al<sup>3+</sup>/l)
- add 10 ml of 0.1% strong cationic flocculation aid (such as Praestol 655 BC),
- stir rapidly for 1 minute, slowly for 15 minutes (pH 12),
- separate brown-colored, coarsely flocculent precipitate by filtering.

The filtrate only contained 0.4 mg Ni/l

#### Remarks

TMT 15<sup>®</sup> requirement: 20 l TMT 15<sup>®</sup> per kg Nickel (Ni)

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

For Nickel 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.

#### Sales & Marketing:

Evonik Performance Materials GmbH

Rodenbacher Chaussee 4

63457 Hanau

Germany

Phone: +49 6181 59-4107 Fax: +49 6181 59-4266

E-mail: [tmt@evonik.com](mailto:tmt@evonik.com)

<http://www.tmt15.com>

#### Applied Technology:

Evonik Performance Materials GmbH

Rodenbacher Chaussee 4

63457 Hanau

Germany

Phone: +49 6181 59-2854 Fax: +49 6181 59-4266

E-mail: [tmt@evonik.com](mailto:tmt@evonik.com)

<http://www.tmt15.com>

Product Information

03/29/2007

ID 4473

Page 1/2

### Available examples

<b>TMT Info No.</b>	<b>Heavy metal</b>	<b>Complexing agent</b>	<b>Branch</b>
TMT Info 30	Copper (Cu)	Tetrammine	Printed circuit board Manufacture
TMT Info 31	Copper (Cu)	EDTA complex	Printed circuit board 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 electro-deposition of paint	Automotive industry
TMT Info 38	Copper (Cu) & Nickel (Ni)	Actual wastewater	Printed circuit board Manufacture

This information and all further technical advice are based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.