

Sample Preparation

TNT 890—Metals Preparation Set

Scope and application: For use with the following TNTplus®-Tests: TNT850-Lead, TNT852-Cadmium, TNT856-Nickel, TNT858-Iron and TNT860-Copper.



Test preparation

Test storage

Storage temperature: 15–25 °C (59–77 °F)

Before starting

Purpose

Hach Vial Tests are designed to measure by means of a photometer the dissolved and non complexed ions. In waste water, however, heavy metals are often undissolved and complexely bound.

The Metals Prep Set TNT 890 was developed to analyze this metal load photometrically, too.

Removal of Interferences

If the sample exhibits turbidity after the Metals Prep Set TNT 890 has been used, this must be eliminated by filtration.

pH-value

To guarantee the complete destruction of organic complexes, the pH-value must be less than pH 1 after addition of the **sulphuric acid A** (TNT 890 A). The pH value of samples with an elevated buffer capacity must be verified before the addition of **potassium peroxodisulphate B** (TNT 890 B) and adjusted to a pH lower than 1 by adding sulphuric acid if necessary.

After the **buffer solution C** (TNT 890 C) has been added the pH of the sample is between 2.5 and 5. No further pH adjustment is necessary.

Note

The reaction tubes should not be used more than **25 times**.

Special note

This method is not intended for the analysis of waste water with a high cyanide content. When using this method in connection with waste water with a high cyanide content:

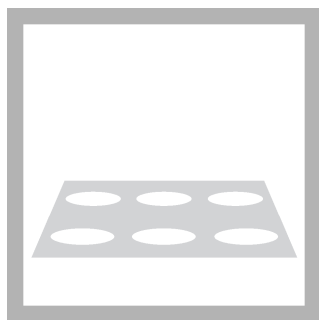
- a) toxic vapor may result: work in a hood
- b) the complexed metals will not necessarily be dissolved, as some cyanide complexes are very stable.

Review safety information and expiration date on the package.

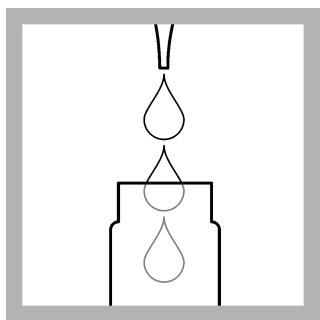
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

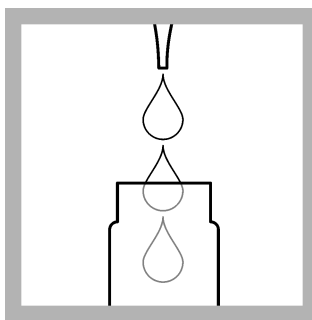
Procedure



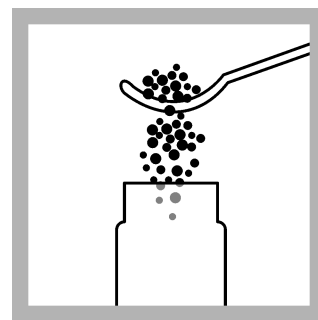
1. Preheat the reactor to **100 °C (212 °F)**.



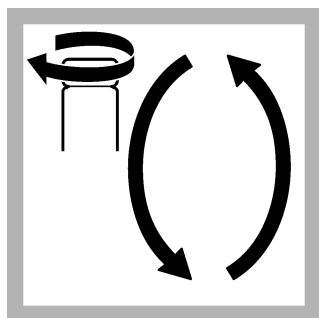
2. Add into the enclosed reaction tube: **10 mL homogenized sample**.



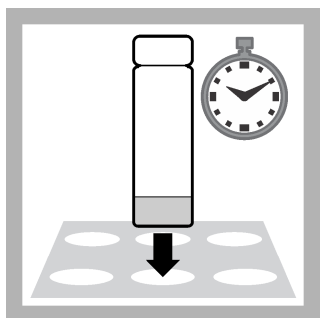
3. Add into the reaction tube: **1.0 mL solution A**. *Control of pH-value if necessary*



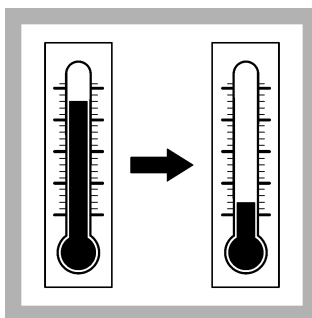
4. Add into the reaction tube: **2 dosing spoon reagent B**.



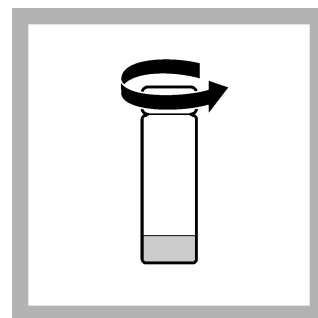
5. Close the reaction tube and invert a few times.



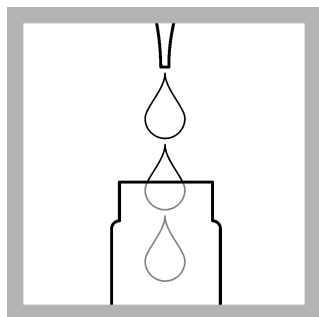
6. Heat in the **reactor** for **60 minutes** at **100 °C (212 °F)**.



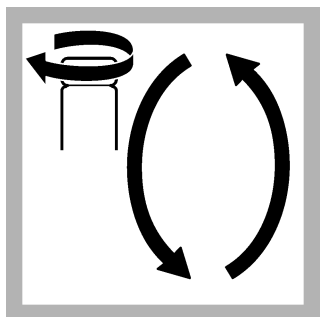
7. Allow to **cool** to room temperature.



8. Open the reaction tube.



9. Add into the reaction tube: **1 mL solution C**.



10. Close the reaction tube and invert a few times. The digested sample is now ready for TNTplus vial tests for the metals of interest.

11. The results can now be reported as total iron, nickel, copper, cadmium or lead. The specifications of the appropriate TNTplus vial test are applied to the analysis.

Summary of method

Undissolved and complexly bound heavy metals are dissolved by boiling in an acidic medium in the presence of an oxidizing agent.



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