

6–60 mg/L Zr

LCK 364

**Scope and application:** For process analysis of zirconium-based coating baths and commercial concentrates for the preparation of coating baths.



## Test preparation

### Test storage

Storage temperature: 2–8 °C (36–46 °F)

### pH/Temperature

The pH of the water sample must be between pH 0.5– 9.0.

The temperature of the water sample and reagents must be between 15–25 °C (59–77 °F).

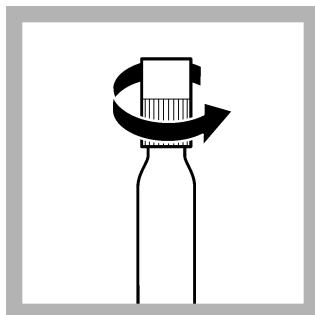
### Before starting

If the reaction time is exceeded, the absorbances remain stable for a maximum of 15 minutes.

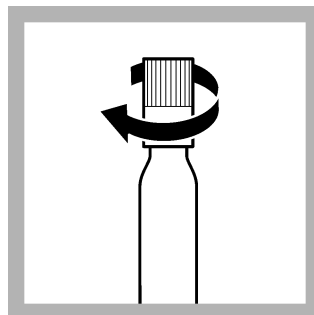
### Procedure



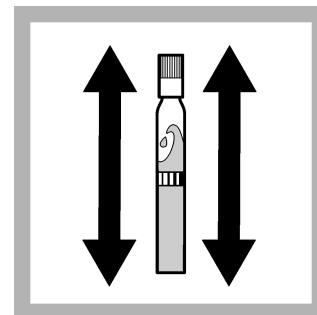
1. Carefully remove the foil from the screwed-on DosiCap Zip.



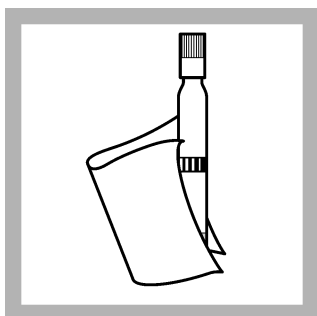
2. Unscrew the DosiCap Zip.



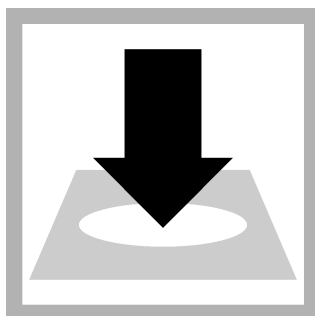
3. **Immediately** screw the DosiCap Zip back on; fluting at the top.



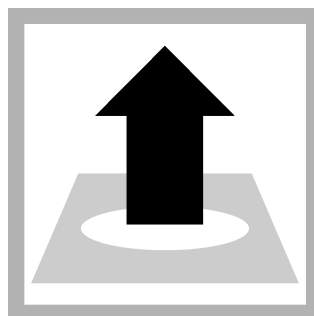
4. Shake vigorously.



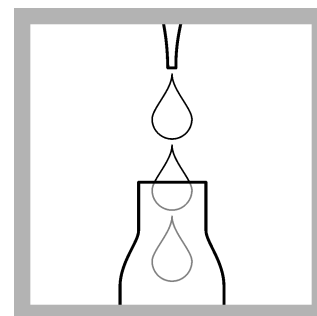
5. Thoroughly clean the outside of the cuvette.



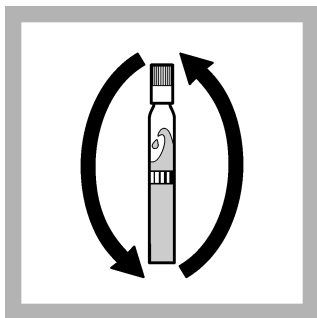
6. Insert the cuvette into the cell holder.  
DR 1900: Go to LCK/TNTplus methods.  
Select the test, push **READ**.



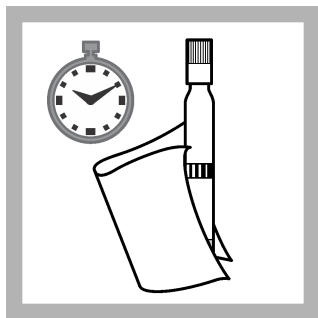
7. Remove the cuvette.



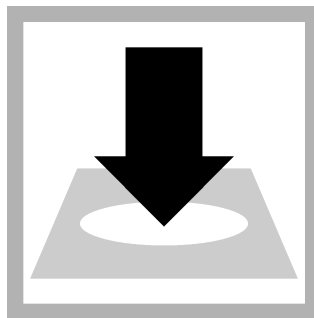
8. Carefully pipette into the same cuvette: 0.2 mL of sample.



9. Immediately close the cuvette and invert a few times until no more streaks can be seen.



10. After 5 minutes, thoroughly clean the outside of the cuvette and evaluate.



11. Insert the cuvette into the cell holder.  
DR 1900: Push **READ**.

## Interferences

The ions listed in [Table 1](#) and [Table 2](#) have been individually checked against the given concentrations and do not cause interference. The cumulative effects and the influence of other ions have not been determined.

Undissolved zirconium cannot be determined.

**Table 1 Fluoridated coating baths**

|           |  |
|-----------|--|
| 1000 mg/L | $\text{Cl}^-$ , $\text{Na}^+$ , $\text{K}^+$ , $\text{SO}_4^{2-}$  |
| 500 mg/L  | $\text{Al}^{3+}$ , $\text{B}^{3+}$ , $\text{Cu}^{2+}$ , $\text{Fe}^{2+}$ , $\text{Fe}^{3+}$ , $\text{Zn}^{2+}$ , $\text{NO}_3^-$ |
| 200 mg/L  | $\text{Ca}^{2+}$ , $\text{Mg}^{2+}$ , $\text{NH}_4^+$ , $\text{Si}^{4+}$ , $\text{F}^-$  |
| 100 mg/L  | $\text{Cr}^{3+}$ , $\text{Cr}^{6+}$  |
| 50 mg/L   | $\text{Mn}^{2+}$ , $\text{Ni}^{2+}$ , $\text{Pb}^{2+}$ , $\text{PO}_4^{3-}$  |
| 20 mg/L   | $\text{V}^{4+}$  |
| 2 mg/L    | $\text{Mo}^{6+}$ , $\text{Ti}^{4+}$  |

**Table 2 Water and coating baths without fluoride**

|           |  |
|-----------|--|
| 1000 mg/L | $\text{Cl}^-$ , $\text{Na}^+$ , $\text{K}^+$   |
| 500 mg/L  | $\text{Al}^{3+}$ , $\text{B}^{3+}$ , $\text{Cu}^{2+}$ , $\text{Fe}^{2+}$ , $\text{Fe}^{3+}$ , $\text{Zn}^{2+}$ , $\text{NO}_3^-$ |
| 200 mg/L  | $\text{Ca}^{2+}$ , $\text{Mg}^{2+}$ , $\text{NH}_4^+$ , $\text{Si}^{4+}$ , $\text{F}^-$  |
| 100 mg/L  | $\text{Cr}^{3+}$ , $\text{Cr}^{6+}$  |
| 50 mg/L   | $\text{Mn}^{2+}$ , $\text{Ni}^{2+}$ , $\text{Pb}^{2+}$ , $\text{SO}_4^{2-}$  |
| 20 mg/L   | $\text{V}^{4+}$  |
| 5 mg/L    | $\text{PO}_4^{3-}$   |
| 2 mg/L    | $\text{Mo}^{6+}$ , $\text{Ti}^{4+}$  |

## Summary of method

Zirconium ions form a water-soluble orange-red complex with the selective color reagent in a hydrochloric acidic solution.



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