

## Application Notes: Reflectometry – Potassium in Soil Samples

### Reflectometric evaluation of the turbidity after reaction with Kalignost

#### Reagents

Catalog No. 116992 **Reflectoquant® Potassium Test**  
 Catalog No. 117246 **Reflectometer RQflex® 20**  
 Catalog No. 102103 **Calcium lactate (for soil tests)**  
 Catalog No. 100319 **Hydrochloric acid 32 %**  
**Folded filter**

This application note pertains to RQflex® 20 and all discontinued instruments (RQflex® 10, RQflex® plus)



#### Sample preparation

Preparation of DL solution for extraction:

Stock solution:

Add 800 ml boiling water to 120 g Calcium lactate and stir until the lactate is completely dissolved. Add 40 ml 10 M hydrochloric acid to the warm solution and fill up to 1 l by adding distilled water after the solution has cooled down to room temperature.

DL solution for use: (prepare the solution daily!)

Dilute 50 ml stock solution to 1 l using distilled water.

The pH of the solution for use must be 3.6.

Weigh approx. 10 g of soil sample exactly into a 200-ml Erlenmeyer flask, add 100 ml of DL solution for use and stir for 60 minutes. Then filter through a folded filter (= sample solution).

#### Analysis

Fill the test vessel to the 5-ml mark with the sample solution (20 - 40 °C). Add 10 drops of reagent K-1 and mix; add 6 drops of reagent K-2 and mix; add 1 level blue microspoon of reagent K-3 and dissolve by swirling. Press the START button of the reflectometer.

After the end of the waiting time (300 seconds), swirl the measurement sample and transfer the measurement sample and the blank into 2 separate cells and measure them in the reflectometer. The value [mg/l] will be stored automatically. (Please refer to the RQflex® plus operating instructions and the package insert of the Reflectoquant® plus Potassium Test.)

#### Calculation

$$\text{Potassium content [mg/100g]} = \frac{\text{Measured value [mg/l]} \times \text{Vol. extract. sol [ml]} \times 100}{\text{Weight of sample [g]} \times 1000}$$

#### Results - Comparison with atomic absorption spectroscopy (AAS)

Sample	Reflectoquant® [mg/100g]	AAS [mg/100g]
1	9.4	10
2	12.6	13
3	8.8	10
4	10.9	11

### Materials

Product #	Description
1.02103	Calcium lactate for soil tests
1.00319	Hydrochloric acid 32% for analysis EMSURE® for analysis EMSURE®
1.16992	Potassium Test Method: reflectometric with test strips and reagent 0.25 - 1.2 g/l K Reflectoquant®
1.17246	Reflectometer