

Examination and evaluation of the measuring system

Krypton K ClO₂

– monitoring of chlorine dioxide concentration in drinking water

Abridged version of the evaluation report dating Oct. 11, 2007

The measuring system Krypton K ClO₂ by the Dr. A. Kuntze GmbH, Meerbusch (Germany), was examined and evaluated at IWW Water Centre, Muelheim (Germany) regarding its applicability for monitoring chlorine dioxide concentrations in drinking water. The respective online measuring system measures chlorine dioxide by an amperometric approach.

For the examination and evaluation, the requirements of the German Drinking Water Regulation 2001 and of the standard method EN ISO 15839 (Online sensors/analysing equipment for water – specifications and performance tests) were taken into account.

- The calibration function of the Krypton K's analysis method was found to be linear over the whole application range (0.05-4.00 mg/l).
- The limit of quantification (LOQ) was found to be 0.05 mg/l ClO₂, and the limit of detection (LOD) 0.02 mg/l. Accordingly, concentrations at the lower limit of the German Drinking Water Regulation 2001 (min. 0.05 mg/l after treatment for disinfection with chlorine dioxide) can be determined quantitatively with the required statistical accuracy.
- The accuracy of the mean was found to be very good over the whole application range as well as in the lower part of the measuring range. The recovery rate in the lower part of the application range at 0.16 mg/l was 98% (0.157 mg/l ClO₂).
- The precision of the method was found to be very good even in the lower part of the application range, with 3.3% or 0.16 +/- 0.005 mg/l within-batch precision and 4.2% or 0.15 +/- 0.006 mg/l between-batch precision over a period of six days.
- The response time of the analysis method – 21 seconds for positive changes and 22 seconds for negative changes – was found to be very good.

The measuring system Krypton K ClO₂ by the Dr. A. Kuntze GmbH is very well suited to monitor the chlorine dioxide concentration in drinking water according to the German national legislation.

This evaluation is based on the method performance characteristics linearity, limit of quantification, accuracy of the mean, precision, and response time, as determined under laboratory conditions.

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