

1.1.43 Boron

1.1.43.1 Determination via inductively coupled plasma atomic emission spectrometry (ICP-AES)

Basically, this method is suited for the determination of silver, aluminium, arsenic, boron, barium, beryllium, bismuth, calcium, cadmium, cobalt, chromium, copper, iron, potassium, lithium, magnesium, manganese, molybdenum, sodium, nickel, phosphorus, lead, sulphur, antimony, selenium, silicon, tin, strontium, titanium, vanadium, tungsten, zinc and zirconium in water.

Principle

The inductively coupled plasma atomic emission spectrometry (ICP-AES) is a measuring technique for detection and determination of elements using atomic emission. The measuring solution is being atomised and the aerosol is being transported into an inductively coupled plasma (ICP) using a carrier gas. There, the elements are stimulated for radiation. These are fractionised spectrally in a spectrometer and the intensities of the emitting element lines are measured by detectors (photomultipliers). A quantitative conclusion is possible by calibration with reference solutions, whereas in a wide range (mostly multiple powers of ten) a linear correlation exists between emission lines intensities and element concentrations. The elements can either be determined simultaneously or sequentially.

Procedure

For the exact procedure of this special method it is referred to the technical manual or the DEV.

Specifications of the results

In mg/l with two decimals

Limit values

According to the "TrinkwV 2001 (DE)"/German Drinking Water Ordinance: 1 mg/l

Recommended guideline value according to WHO (World Health Organization): 0.5 mg/l

Limit value according to EU – Council – Directive 98/83/EG: 1 mg/l

Literature

1. DEV DIN EN ISO 11885 - E 22