Analysis of Dicyandiamide in Chemical Fertilizer

Dicyandiamide inhibits the nitrification of organic nitrogen and nitrogen in ammonia, and is thus blended into chemical fertilizers at a level of 0.1% to several percent to prevent the loss of nitrogen components after fertilizer is applied. An HPLC method, based on an analytical column packed with “silica gel to which an amino group or aminopropyl group is chemically bonded”, is used in the determination of dicyandiamide in fertilizer. In this application the analysis of dicyandiamide in chemical fertilizer is described. Using a standard sample preparation method a linear calibration curve over a concentration range of 1 to 50mg/L was obtained. The quantity of dicyandiamide in chemical fertilizer was determined to be approximately 0.1%, with a relative standard deviation of 0.6%.

Table 1. Analytical conditions

Column:	TSKgel NH_2-100, 3µm, 4.6mm ID x 15cm
Eluent:	acetonitrile / methanol = 6 / 1
Flow rate:	1.0mL/min
Detector:	UV@215nm
Column temp.:	40°C
Injection vol.:	10µL

Figure 1. Pretreatment of chemical fertilizer

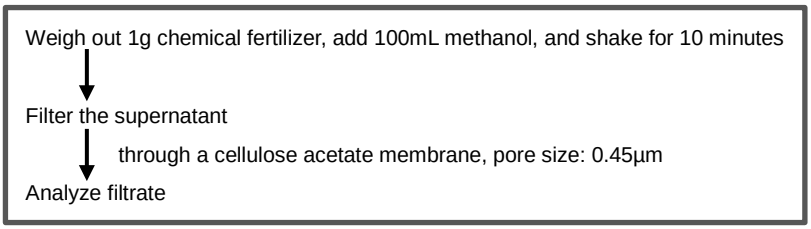
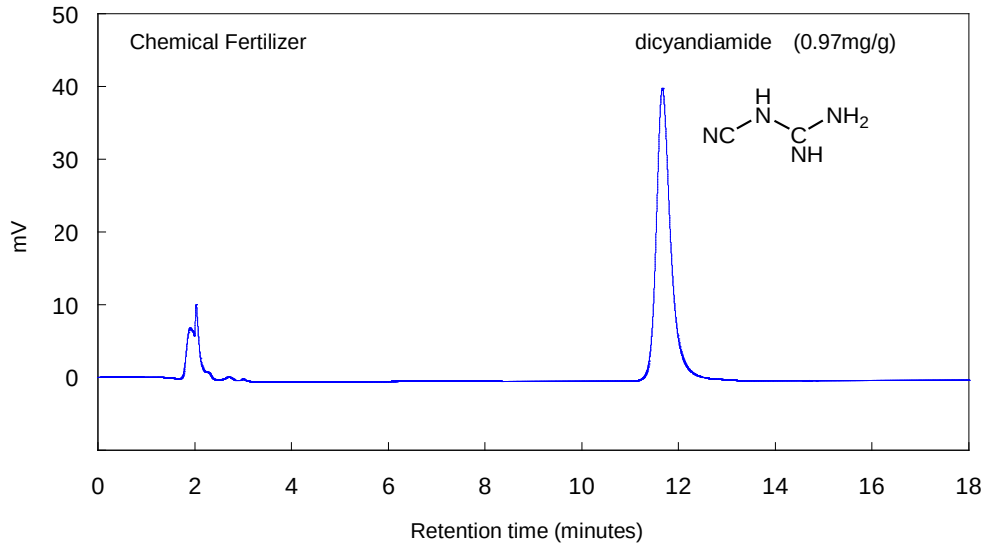


Figure 2. Chromatogram of chemical fertilizer



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