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## **Fertilizers and soil conditioners — Determination of biuret content of urea-based fertilizers — HPLC method**

*Engrais et amendements — Détermination de la teneur en biuret des engrais à base d'urée — Méthode HPLC*



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## Foreword

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The committee responsible for this document is ISO/TC 134, *Fertilizers and soil conditioners*.

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## Introduction

Biuret, also known as 2-imidodicarbonic diamide ( $\text{NH}_2\text{CONHCONH}_2$ ), is one of several by-products formed when molten urea is heated near or above its melting point (132 °C) during the manufacturing of urea.<sup>[1][2]</sup> The exact mechanism of biuret damage to different plants is still under investigation, but the harmful effects of high concentrations have been well documented, and many regulations/standards concerning the maximum allowed concentrations and/or the analytical methods have been published around the world.<sup>[1][3][4][5][6][7][8]</sup> Nowadays, there are at least three kinds of analytical methods available for the determination of biuret in fertilizers, including traditional spectrophotometric methods,<sup>[5][7]</sup> the atomic absorption spectrophotometric method,<sup>[8]</sup> and HPLC methods.<sup>[2][5][10][11]</sup> Recently, HPLC methods have shown superiority over other types of methods, owing to their ability to quantitatively determine biuret content by completely separating biuret from numerous urea-condensates. ISO/TC 134 is well aware of great efforts made by analysts/scientists around the world on separately seeking a uniform, quick and accurate method for the determination of biuret in fertilizers and attempted to unify the HPLC method to the greatest extent herein, based on the preliminary research by the China, US, and European experts.<sup>[2][5][10][11]</sup>