

ICS

English version

Straight ammonium nitrate fertilizers - Comparative study on the determination of porosity (oil retention)

Engrais simples à base de nitrate d'ammonium - Etude comparative de méthodes de détermination de la porosité (rétention fuel)

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Foreword

This document (CR 14539:2002) has been prepared by Technical Committee CEN/TC 260, "Fertilizers and liming materials", the secretariat of which is held by DIN.

It is published for information only and does not have the status of a European Standard.

The annexes A to D are informative.

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Introduction

Straight ammonium nitrate fertilizers of high nitrogen content ($> 28\%$), following Directive 80/876/EEC [1] and Directive 87/94/EEC [2], are subject to the particular regulatory requirement of a maximum porosity limit of 4 %. The currently used official EC method is demanding with respect to time and skilled laboratory manpower.

Therefore CEN/TC 260 agreed to launch a new Work Item, in order to compare non-standardized alternative methods for measuring porosity with the official one, through ring testing.

Parallely, oil retention can also be determined by ISO 5313.

1 Scope

This CEN report gives the results of inter-laboratory testing to compare the accuracy and convenience of the official EC method for porosity measurement (given as Annex B) with two non-standardized alternative methods (given as Annexes C and D) already used in some participating laboratories.

Three products, with a porosity between 1 % and 7 %, have been used in the inter-laboratory trials.

2 Test procedure

2.1 Methods for measuring porosity

All the methods tested for measurement of ammonium nitrate porosity are based on immersion of the test sample in gas oil, removing the excess of oil, and finally determining the absorbed amount of oil through weighing. The methods differ in the way of removing the excess oil.

Table 1 — Methods for measuring porosity

Method	Removal of oil	Protocol
Method 1 : EC Method [2] ^a	Hand-rubbing between sheets of filter paper	see Annex B
Method 2 : Centrifuge method	Draining and centrifuging	see Annex C
Method 3 : Roller drum method	Draining and roller drum with filter thimble	see Annex D
^a This method is based on ISO 5313, with some minor but significant differences.		

WARNING — Appropriate safety rules and procedures should be followed while handling samples and residues of Ammonium nitrate impregnated with gas oil.

2.2 Products

2.2.1 Test samples: straight ammonium nitrate

Three different ammonium nitrate samples have been provided to all the participants. Two samples were fertilizer ammonium nitrates of the 33,5 % N type, the third was a special ammonium nitrate, with a higher porosity well over 4 %.

2.2.2 Gas oils

All gas oils used in the ring test conformed to the requirements of Directive 87/94/EEC, Annex II [2]. In order to improve the accuracy of the ring test, one specific gas oil, distributed centrally in this ring test, has been used as a reference by all participants, parallel to oils from local origin.