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Fertilizers – Crushing strength determination on fertilizers grains

S.R. CR 12333:1996

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REPORT
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CR 12333:1996

May 1996

English version

Fertilizers - Crushing strength determination on
fertilizer grains

Engrais - Détermination de la
résistance à l'écrasement des
engrais

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CEN

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FOREWORD

The present report arises from work done by CEN/TC 260/WG 2 under the work item "Crushing strength determination" with the view of producing a European Standard.

Unfortunately, after several ring tests, results appeared to be so randomly distributed that a statistically significant interpretation showing good reproducibility and repeatability could not be obtained.

Tests on correlation have also shown that no significant correlation as to the causes of the dispersion of the results could be obtained within the proposed time scale and probably not without expending too much effort, time and money.

Therefore, since the results obtained may be added to those of past publications in the literature, CEN/TC 260 decided the results obtained should not be ignored by the scientific community.

Contents

Introduction	3
1 Scope	4
2 Norminative References	4
3 Definition	4
4 Principle	5
5 Apparatus	5
6 Sample preparation	6
7 Procedure	6
8 Test report	6
9 Statistical calculations	6
10 Expression of Results	7
11 Conclusion	9
Annex A Flow chart of statistical calculations (informative)	10
Annex B Crushing strength - Interlaboratory test (informative)	
Annex C Crushing strength - Interlaboratory test - Outlier deleted (informative)	11
Annex D Crushing strength - Interlaboratory test - Outlier deleted (informative)	12
Annex E Crushing strength - Interlaboratory test - No outlier in this grouping (informative)	13
Annex F Crushing strength - Interlaboratory test - Outlier deleted (informative)	14
Annex E - Bibliography (informative)	

Introduction

The resistance to crushing (crushing strength) of fertilizer is an important property used in quality control of fertilizer production. It influences the storage, handling as well as spreading properties of fertilizer.

However, crushing strength of fertilizer grains is not a constant property *stricto sensu*. Crushing strength is significantly influenced by the content of free water in the fertilizer, humidifying and drying during storage as well as by temperature changes. Time dependent processes in the grain and bulk during the lifetime of the grains may also affect the crushing strength.

Nevertheless, there are several "in house" methods used for the measurement of crushing strength of fertilizer grains which give different results. There is also a need for a standardised method.

This document reports the results of the international ring test, organized by CEN/TC260/WG2 (physical properties), carried out 1992, with the purpose of standardising the measurement technique of crushing strength.

1 Scope

This report is applicable to crushing strength measurement as applied to grains of fertilizer obtained in prilling or wet-granulation process. Compacted or crystalline materials were not considered.

2 Normative references

This report incorporates by dated or undated reference, provisions from other publications. These normative references are cited by the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this CEN report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 565	1990	Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal size of openings
ISO 5725	1986	Precision of test methods - Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests

3 Definition

For the purposes of this CEN report, the following definition applies :

crushing strength of grains : it is expressed as the force necessary to destroy the grain as such.

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