
STATUTORY INSTRUMENTS

1996 No. 1342

AGRICULTURE

The Fertilisers (Sampling and Analysis) Regulations 1996

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THE FERTILISERS (SAMPLING AND ANALYSIS) REGULATIONS 1996

1. Title, commencement and interpretation
 2. Prescribed amount for the purposes of the definition of sampled portion
 3. Manner of taking, marking, sealing and fastening up of samples
 4. Methods of sending part of a sample
 5. Qualifications of agricultural analysts and deputy agricultural analysts
 6. Application of the methods of analysis
 7. Form of certificate of analysis
 8. Modification of the Agriculture Act 1970
 9. Revocations
- Signature

SCHEDULE 1 — MANNER OF TAKING, MARKING, SEALING AND FASTENING UP OF SAMPLES

PART I — DEFINITIONS

PART II — GENERAL INSTRUCTIONS FOR THE TAKING OF SAMPLES

1. In the case of fertiliser in containers, only unopened containers...
2. The sample shall be taken and prepared as quickly as...
3. No sample shall be drawn from any part of the...
4. When stones are naturally present in a fertiliser, they shall,...
5. An inspector who intends to take a sample in accordance...
6. The sampling apparatus shall be made of materials which cannot...
7. In the case of a sampling spear its dimensions shall...
8. Notwithstanding the provisions of these Regulations, a sampling spear shall...
9. Mechanical apparatus may be used for the sampling of moving...
10. Apparatus designed to divide the sample into approximately equal parts...

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11. A sample taken in accordance with the methods described below...
 - PART III — QUANTITATIVE REQUIREMENTS
 1. **Sampled portion**
 2. **Incremental sample**
 3. **Aggregate sample**
 4. **Final sample**
 - PART IV — TAKING AND PREPARATION OF SAMPLES
 1. **Incremental samples**
 2. **Aggregate sample**
 3. **Reduced sample**
 4. **Final samples**
 - PART V — MARKING, SEALING AND FASTENING UP OF THE FINAL SAMPLE
 1. Each container of a final sample shall be so secured...
 2. A label shall be attached to the container or receptacle...
 3. The container or receptacle may also be sealed, or the...

SCHEDULE 2 — METHODS OF ANALYSIS

PART I

1. **General**
2. **Reagents**
3. **Water**
4. **Apparatus**
5. **Methods of Analysis**

1.

PREPARATION OF THE SAMPLE FOR ANALYSIS

1. SCOPE
2. PRINCIPLE
 - 2.1 Solid fertilisers: the preparation of a final sample received at...
 - 2.2 Fluid fertilisers: the final sample is mixed by shaking to...
3. APPARATUS
 - 3.1 Sample divider (optional).
 - 3.2 Sieves with apertures of 0.2 mm and 0.5 mm.
 - 3.3 250 ml flasks, stoppered.
 - 3.4 Porcelain pestle and mortar or grinder.
4. CHOICE OF TREATMENT TO BE USED
 4. **Final samples which must not be ground**
 - 4.2 **Finals samples which must be divided and part of which must be ground**
 - 4.3 **Final samples in respect of which all determinations are carried out on a grounded product**
5. METHOD
6. SPECIAL CASES
7. FLUID FERTILISERS

2.

DETERMINATION OF AMMONIACAL NITROGEN

1. SCOPE
2. FIELD OF APPLICATION

3. PRINCIPLE
 4. REAGENTS
 - 4.1 Hydrochloric acid solution, 50% (V/V): dilute an appropriate volume of...
 - 4.8 Sodium hydroxide solution, 30 g per 100 ml, ammonia free...
 - 4.9 Indicator solutions: Mixed indicator: (4.9.1) Solution A: dissolve 1 g...
 5. APPARATUS
 - 5.1 Distillation apparatus consisting of a round-bottomed flask of suitable capacity...
 - 5.2 Rotary shaker, 35 to 40 turns per minute.
 6. PREPARATION OF SAMPLE
 7. PROCEDURE
 - 7.2 **Determination**
 - 7.3 **Blank**
 - 7.4 **Control test**
 8. EXPRESSION OF RESULT
- TABLE FOR METHOD 2

3a.

DETERMINATION OF NITRIC AND AMMONIACAL NITROGEN — ULSCH METHOD

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 **Preparation of the solution**
- 7.2 **Determination**
- 7.3 **Blank test**
- 7.4 **Control test**
8. EXPRESSION OF RESULTS

3b.

DETERMINATION OF NITRIC AND AMMONIACAL NITROGEN — ARND METHOD

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 **Preparation of the solution for analysis**
- 7.2 **Determination**
- 7.3 **Blank test**
- 7.4 **Control test**
8. EXPRESSION OF RESULTS

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3c.

DETERMINATION OF NITRIC AND AMMONIACAL NITROGEN — DEVARDA METHOD

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 Distillation apparatus consisting of a round bottomed flask of suitable...
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the solution for analysis***
- 7.2 ***Determination***
- 7.3 ***Blank test***
- 7.4 ***Control test***
8. EXPRESSION OF RESULTS

4a.

*DETERMINATION OF TOTAL NITROGEN IN CALCIUM
CYANAMIDE — IN THE ABSENCE OF NITRATE*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 Distillation apparatus. See Method 2.
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the solution***
- 7.2 ***Determination***
- 7.3 ***Blank test***
- 7.4 ***Control test***
8. EXPRESSION OF RESULT

4b.

*DETERMINATION OF TOTAL NITROGEN IN CALCIUM
CYANAMIDE — IN THE PRESENCE OF NITRATE*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the solution***
- 7.2 ***Determination***
- 7.3 ***Blank test***
- 7.4 ***Control test***
8. EXPRESSION OF RESULT

5.

DETERMINATION OF TOTAL NITROGEN IN UREA

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 Distillation apparatus. See Method 2.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the solution***
- 7.2 ***Determination***
- 7.3 ***Blank test***
- 7.4 ***Control test***
8. EXPRESSION OF RESULT

6.

DETERMINATION OF CYANAMIDE NITROGEN

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 Distillation apparatus. See Method 2.
- 5.2 500 ml graduated flask (e.g. Stohmann).
- 5.3 Rotary shaker, 35 – 40 turns per minute.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the solution for analysis***
- 7.2 ***Determination***
- 7.3 ***Blank test***
- 7.4 ***Control test***
8. EXPRESSION OF RESULT

7.

DETERMINATION OF BIURET IN UREA

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 Spectrophotometer.
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 ***Preparation of the standard curve***
- 7.2 ***Preparation of solution for analysis***
- 7.3 ***Determination***
8. EXPRESSION OF RESULTS

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8a.

DETERMINATION OF DIFFERENT FORMS OF NITROGEN IN THE SAME SAMPLE — IN THE PRESENCE OF CYANAMIDE NITROGEN

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
- 3.1 **Total soluble and insoluble nitrogen**
- 3.2 **Forms of soluble nitrogen**
4. REAGENTS
 - 4.1 Potassium sulfate.
 - 4.2 Iron powder, reduced with hydrogen (the prescribed quantity of iron...
 - 4.3 Potassium thiocyanate.
 - 4.4 Potassium nitrate.
 - 4.5 Ammonium sulfate.
 - 4.6 Urea.
 - 4.7 Sulfuric acid solution: dilute an appropriate volume of sulfuric acid...
 - 4.8 Sulfuric acid, 0.1 M solution.
 - 4.9 Sodium hydroxide solution, 30 g per 100 ml, ammonia free....
 - 4.10 Sodium or potassium hydroxide, 0.2 M solution, free from carbonates....
 - 4.11 Stannous chloride solution: Dissolve 120 g of stannous chloride (SnCl₂·2H₂O)...
 - 4.12 Sulfuric acid, concentrated (ρ=1.84 g/ml).
 - 4.13 Hydrochloric acid solution: dilute an appropriate volume of hydrochloric acid...
 - 4.14 Glacial acetic acids.
 - 4.15 Sulfuric acid solution, approximately 30% (W/V) H₂SO₄.
 - 4.16 Ferrous sulfate, crystalline, FeSO₄·7H₂O
 - 4.17 Sulfuric acid, 0.05 M solution.
 - 4.18 Octan-1-ol.
 - 4.19 Potassium carbonate, saturated solution.
 - 4.20 Sodium or potassium hydroxide, 0.1 M solution, free from carbonate....
 - 4.21 Barium hydroxide, saturated solution.
 - 4.22 Sodium carbonate solution, 10 g per 100 ml.
 - 4.23 Hydrochloric acid, 2 M solution.
 - 4.24 Hydrochloric acid, 0.1 M solution.
 - 4.25 Urease solution: Suspend 0.5 g of active urease in 100...
 - 4.26 Xanthidrol solution, 5 g per 100 ml in ethanol or...
 - 4.27 Copper oxide (CuO): 0.3 to 0.4 g per determination or...
 - 4.28 Anti-bump granules washed in hydrochloric acid and ignited.
 - 4.29 Indicator solutions: (4.29.1) Mixed indicator solution: Solution A: dissolve 1...
 - 4.30 Indicator papers: Litmus, bromothymol blue (or other papers sensitive in...
 - 4.31 Ethanol or methanol: solution 95%.
5. APPARATUS
 - 5.1 Distillation apparatus. See Method 2.
 - 5.2 Apparatus for the determination of ammoniacal nitrogen 7.2.5.3. An example...
 - 5.3 Apparatus for the estimation of urea nitrogen (7.2.6.1). It consists...
 - 5.4 Rotary shaker, 35 – 40 turns per minute.
 - 5.5 pH meter.
 - 5.6 Laboratory oven.

- 5.7 Sintered glass crucibles, diameter of pores 5 to 15 microns....
- 6. PREPARATION OF THE SAMPLE
- 7. PROCEDURE
- 7.1 **Total soluble and insoluble nitrogen**
- 7.2 **Forms of soluble nitrogen**
- 8. VERIFICATION OF RESULTS
- 8.1 In certain cases, a difference may be found between the...
- 8.2 Before each analysis, check that the apparatus is working properly...

8b.

DETERMINATION OF DIFFERENT FORMS OF NITROGEN IN THE SAME SAMPLE — IN THE ABSENCE OF CYANAMIDE NITROGEN

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 3.1 **Total soluble nitrogen**
- 3.2 Total soluble nitrogen except nitric nitrogen, by Kjeldahl digestion after...
- 3.3 Nitric nitrogen, by difference: between 3.1.2 and 3.2 and/or between...
- 3.4 Ammoniacal nitrogen, by cold distillation of a weak alkaline solution;...
- 3.5 Ureic nitrogen, either: (3.5.1) By conversion using urease, into ammonia,...
- 4. REAGENTS
- 4.1 Potassium sulfate.
- 4.2 Iron powder, reduced with hydrogen (the prescribed quantity of iron...
- 4.3 Potassium nitrate.
- 4.4 Ammonium sulfate.
- 4.5 Urea.
- 4.6 Sulfuric acid, 0.1 M solution.
- 4.7 Sodium hydroxide solution 30 g per 100 ml, ammonia free....
- 4.8 Sodium or potassium hydroxide, 0.2 M solution, free of carbonates....
- 4.9 Sulfuric acid ($\rho=1.84$ g/ml).
- 4.10 Hydrochloric acid solution: dilute an appropriate volume of hydrochloric acid...
- 4.11 Glacial acetic acid.
- 4.12 Sulfuric acid solution, approximately 30% (W/V) H₂SO₄.
- 4.13 Ferrous sulfate, crystalline FeSO₄·7H₂O.
- 4.14 Sulfuric acid, 0.05 M solution.
- 4.15 Octan-1-ol.
- 4.16 Potassium carbonate, saturated solution.
- 4.17 Sodium or potassium hydroxide, 0.1 M solution.
- 4.18 Barium hydroxide, saturated solution.
- 4.19 Sodium carbonate solution, 10 g per 100 ml.
- 4.20 Hydrochloric acid, 2 M solution.
- 4.21 Hydrochloric acid, 0.1 M solution.
- 4.22 Urease solution: suspend 0.5 g active urease in 100 ml...
- 4.23 Xanthidrol solution, 5 g per 100 ml in ethanol or...
- 4.24 Catalyst: copper oxide (CuO), 0.3 to 0.4 g per determination,...
- 4.25 Anti-bump granules of pumice stone washed with hydrochloric acid and...
- 4.26 Indicator solutions: (4.26.1) Mixed indicator: Solution A: dissolve 1 g...
- 4.27 Indicator papers: litmus, bromothymol blue (or other papers sensitive in...
- 4.28 Ethanol or methanol, 95% (V/V).
- 5. APPARATUS

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- 5.1 Distillation apparatus. See Method 2.
- 5.2 Apparatus for determination of ammoniacal nitrogen. An example of the...
- 5.3 Apparatus for determination of ureic nitrogen by the urease method...
- 5.4 Rotary shaker: 35 – 40 turns per minute.
- 5.5 pH meter.
- 5.6 Sintered glass crucibles, diameter of pores 5 to 15 microns....
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 **Preparation of solution for analysis**
- 7.2 **Total nitrogen**
- 7.3 **Total nitrogen excluding nitric nitrogen**
- 7.4 **Nitric nitrogen** is obtained: by difference between
- 7.5 **Ammoniacal nitrogen**
- 7.6 **Ureic nitrogen**
8. VERIFICATION OF RESULTS
- 8.1 Before each analysis, check the functioning of the apparatus and...

9a.

EXTRACTION OF TOTAL PHOSPHORUS BY MINERAL ACIDS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Sulfuric acid (p=1.84 g/ml).
- 4.2 Nitric acid (p=1.40 g/ml).
5. APPARATUS
- 5.1 A Kjeldahl flask, with a capacity of at least 500...
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 **Extraction**
- 7.2 **Determination**

9b.

EXTRACTION OF PHOSPHORUS BY 2% FORMIC ACID

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Formic acid, 2% (20 g per litre): dilute 82 ml...
5. APPARATUS
- 5.1 500 ml graduated flask with a wide neck (eg Stohmann)....
- 5.2 Rotary shaker, 35 – 40 turns per minute.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Extraction Weigh to the nearest 0.001 g, 5 g of...
- 7.2 Determination Determine the phosphorus using Method 10 on an aliquot...

9c.

EXTRACTION OF PHOSPHORUS BY 2% CITRIC ACID

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENT
- 4.1 2% citric acid solution (20 g per litre), prepared from...
5. APPARATUS
- 5.1 Rotary shaker: 35 – 40 turns per minute.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 **Extraction**
- 7.2 **Determination**

9d.

EXTRACTION OF PHOSPHORUS BY NEUTRAL AMMONIUM CITRATE

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Neutral ammonium citrate solution (pH=7.0). This solution must contain 185...
5. APPARATUS
- 5.1 pH meter.
- 5.2 Water bath which can be set thermostatically at 65°C, equipped...
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 **Extraction**
- 7.2 **Determination**

9e.

*EXTRACTION OF PHOSPHORUS BY ALKALINE
AMMONIUM CITRATE (PETERMANN'S METHOD) AT 65°C*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 **Petermann's solution**
5. APPARATUS
- 5.1 Water bath which can be maintained at a temperature of...
- 5.2 500 ml graduated flask with a wide neck (eg Stohmann)....
6. PREPARATION OF SAMPLE
7. PROCEDURE
- 7.1 Extraction Weigh to the nearest 0.001g, 1 g of the...
- 7.2 Determination Determine the phosphorus using Method 10 on an aliquot...

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9f.

EXTRACTION OF PHOSPHORUS BY ALKALINE AMMONIUM CITRATE (PETERMANN'S) METHOD AT AMBIENT TEMPERATURE

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENT
5. APPARATUS
- 5.1 250 ml graduated flask with a wide neck (eg Stohmann)....
- 5.2 Rotary shaker, 35 – 40 turns per minute.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 **Extraction**
- 7.2 **Determination**

9g.

EXTRACTION OF PHOSPHORUS BY ALKALINE AMMONIUM CITRATE (JOLIE'S METHOD)

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Jolie's alkaline solution of ammonium citrate: This solution contains 400...
- 4.2 8-Hydroxyquinoline (oxine), powdered.
5. APPARATUS
- 5.1 Rotary shaker, 35 – 40 turns per minute.
- 5.2 500 ml graduated flask with a wide neck (Stohmann).
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 **Extraction**
- 7.2 **Determination**
8. NOTE

9h.

EXTRACTION OF PHOSPHORUS BY WATER

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. APPARATUS
- 4.1 500 ml graduated flask with a wide neck (eg Stohmann)....
- 4.2 Rotary shaker, 35 – 40 turns per minute.
5. PREPARATION OF THE SAMPLE
6. PROCEDURE
- 6.1 **Extraction**
- 6.2 **Determination**

10.

*DETERMINATION OF EXTRACTED PHOSPHORUS
(Gravimetric method using quinoline phosphomolybdate)*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Concentrated nitric acid ($\rho = 1.40 \text{ g/ml}$).
 - 4.2 Molybdate reagent: (4.2.1) Preparation of the reagent based on sodium...
5. APPARATUS
 - 5.1 Filter crucible with porosity of 5 to 20 microns.
 - 5.2 Drying oven regulated at $250^{\circ}\text{C} + 10^{\circ}\text{C}$.
 - 5.3 Sintered glass funnel with porosity of 5 to 20 microns....
6. PROCEDURE
 - 6.1 ***Treatment of the solution***
 - 6.2 ***Hydrolysis***
 - 6.3 ***Weighing the crucible***
 - 6.4 ***Precipitation***
 - 6.5 ***Filtering and Washing***
 - 6.6 ***Drying and weighing***
 - 6.7 ***Blank test***
 - 6.8 ***Control test***
7. EXPRESSION OF RESULTS

11.

DETERMINATION OF WATER-SOLUBLE POTASSIUM

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Formaldehyde, 25 – 35% solution, filter if necessary before use....
 - 4.2 Potassium chloride.
 - 4.3 Sodium hydroxide, 10 M solution. Care should be taken to...
 - 4.4 Indicator solution: dissolve 0.5 g phenolphthalein in 100 ml 90%...
 - 4.5 EDTA solution: 4 g of the dihydrated disodium salt of...
 - 4.6 STPB solution: dissolve 32.5 g sodium tetraphenylborate in 480 ml...
 - 4.7 Wash liquid: dilute 20 ml of the STPB solution (4.6)...
 - 4.8 Bromine water: saturated bromine solution in water.
5. APPARATUS
 - 5.1 Filter crucibles with a porosity of 5 to 20 microns....
 - 5.2 Oven regulated at $120^{\circ} + 10^{\circ} \text{C}$.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
 - 7.1 ***Extraction***
 - 7.2 ***Determination***
 - 7.3 ***Weighing the crucible***
 - 7.4 ***Precipitation***
 - 7.5 ***Filtering and washing***
 - 7.6 ***Drying and weighing***
 - 7.7 ***Blank test***

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- 7.8 **Control test**
- 8. EXPRESSION OF RESULTS
- 8.1 **Method of calculation and formulae**

12.

DETERMINATION OF CHLORIDES IN THE ABSENCE OF ORGANIC MATERIAL

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Nitrobenzene or diethyl ether.
 - 4.2 Nitric acid, 10 M solution.
 - 4.3 Indicator solution: dissolve 40 g of ferric ammonium sulfate [Fe₂(SO₄)₃·(NH₄)₂SO₄·24H₂O]...
 - 4.4 Silver nitrate, 0.1 M solution.
 - 4.5 Ammonium thiocyanate, 0.1 M solution. Preparation: since this salt is...
 - 4.6 Potassium Chloride solution: Dissolve 2.103g of potassium chloride, previously dried...
- 5. APPARATUS
 - 5.1 Rotary shaker, 35 – 40 turns per minute.
- 6. PREPARATION OF SAMPLE
- 7. PROCEDURE
 - 7.1 **Extraction**
 - 7.2 **Determination**
 - 7.3 **Blank test**
 - 7.4 **Control test**
- 8. EXPRESSION OF RESULT

13a.

DETERMINATION OF FINENESS OF GRINDING — DRY METHOD

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. APPARATUS
 - 4.1 Mechanical sieve shaker.
 - 4.2 Sieves with apertures of 0.160 mm and 0.630 mm respectively...
- 5. PROCEDURE
- 6. EXPRESSION OF RESULTS

13b.

DETERMINATION OF FINENESS OF GRINDING OF SOFT NATURAL PHOSPHATES

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS Sodium hexametaphosphate solution, 1 g per 100 ml.
- 5. APPARATUS
 - 5.1 Sieves with apertures of 0.063 mm and 0.125 mm respectively...
 - 5.2 Glass funnel of 20 cm diameter mounted on a stand....

- 5.3 Laboratory oven.
6. PROCEDURE
7. EXPRESSION OF RESULTS
8. REMARK

14.

*METHODS OF ANALYSIS AND TEST PROCEDURES FOR AMMONIUM NITRATE
FERTILISERS CONTAINING MORE THAN 28% NITROGEN BY WEIGHT*

14a.

METHOD FOR THE APPLICATION OF THERMAL CYCLES

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE AND DEFINITION
4. APPARATUS
- 4.1 Water baths thermostated at 25 (+1) and 50 (+1)° C...
- 4.2 Erlenmeyer flasks with an individual capacity of 150 ml.
5. PROCEDURE

14b.

DETERMINATION OF THE OIL RETENTION VALUE

1. SCOPE AND FIELD OF APPLICATION
2. DEFINITION
3. PRINCIPLE
4. REAGENT
5. APPARATUS
- 5.1 Balance, capable of weighing to the nearest 0.01 gram.
- 5.2 Beakers, of capacity 500 ml.
- 5.3 Funnel, plastic, preferably with a cylindrical wall at the upper...
- 5.4 Test sieve, aperture 0.5 mm, fitting into the funnel (5.3)...
- 5.5 Filter paper, rapid filtering grade, creped, soft, weight 150 g/m²....
- 5.6 Absorbent tissue (laboratory grade).
6. PROCEDURE
- 6.1 Carry out two individual determinations in quick succession on separate...
- 6.2 Remove particles smaller than 0.5 mm using the test sieve...
- 6.3 Filter the entire contents of the beaker through the funnel...
- 6.4 Lay two sheets of filter paper (5.5) (about 500 ×...
- 6.5 **Repeating the rolling procedure and reweighing.**
7. EXPRESSION OF RESULTS
- 7.1 **Method of calculation and formula**

14c.

DETERMINATION OF COMBUSTIBLE INGREDIENTS

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
- 3.1 Analytical-grade chromium VI oxide; CrVIO₃.

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- 3.2 Sulfuric acid diluted to 60% by volume: pour 360 ml...
- 3.3 Silver nitrate: 0.1 M solution.
- 3.4 Barium hydroxide: weigh out 15 grams of barium hydroxide (Ba(OH)₂·8H₂O),...
- 3.5 Hydrochloric acid: 0.1 M standard solution.
- 3.6 Sodium hydroxide: 0.1 M standard solution.
- 3.7 Bromophenol blue: solution of 0.4 grams per litre in water....
- 3.8 Phenolphthalein: solution of 2 grams per litre in 60% by...
- 3.9 Soda lime: particle dimensions, about 1.0 to 1.6 mm.
- 3.10 Demineralised water, freshly boiled to remove carbon dioxide.
- 4. APPARATUS
 - 4.1 filter crucible with a plate of sintered glass and a...
 - 4.2 Compressed nitrogen supply.
 - 4.3 Apparatus made up of the following parts and assembled, if...
- 5. PROCEDURE
 - 5.1 **Sample for analysis**
 - 5.2 **Removal of carbonates**
 - 5.3 **Oxidation and absorption**
 - 5.4 **Measurement of the carbonates originating from organic material**
- 6. BLANK TEST
- 7. EXPRESSION OF RESULTS

14d.

DETERMINATION OF THE pH VALUE

- 1. SCOPE AND FIELD OF APPLICATION
- 2. PRINCIPLE
- 3. REAGENTS
 - 3.1 **Buffer solution, pH 6.88 at 20° C**
 - 3.2 **Buffer solution, pH 4.00 at 20° C**
 - 3.3 Commercially available pH standard solutions may be used.
- 4. APPARATUS
- 5. PROCEDURES
 - 5.1 Calibration of the pH meter Calibrate the pH meter (4)...
- 5.2 **Determination**
- 6. EXPRESSION OF RESULTS

14e.

DETERMINATION OF THE PARTICLE SIZE

- 1. SCOPE AND FIELD OF APPLICATION
- 2. PRINCIPLE
- 3. APPARATUS
 - 3.1 200 mm diameter woven-wire test sieves to BS 410 (1986)...
 - 3.2 Balance to weigh to 0.1 gram.
 - 3.3 Mechanical sieve shaker (if available) capable of imparting both vertical...
- 4. PROCEDURE
 - 4.1 The sample is divided representatively into portions of approximately 100...
 - 4.2 Weigh one of these portions to the nearest 0.1 gram....
 - 4.3 Arrange the nest of sieves in ascending order (receiver, 0.5...
 - 4.4 Shake by hand or machine, imparting both a vertical and...
 - 4.5 Remove the sieves from the nest in turn and collect...

- 4.6 Weigh the material retained on each sieve and that collected...
5. EVALUATION OF RESULTS
- 5.1 Convert the fraction masses to a percentage of the total...
- 5.2 At least two separate analyses should be carried out and...
6. EXPRESSION OF RESULTS

14f.

DETERMINATION OF THE CHLORINE CONTENT (AS CHLORIDE ION)

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
 - 3.1 Acetone AR.
 - 3.2 Concentrated nitric acid (density at 20°C $\rho=1.40$ g/ml).
 - 3.3 Silver nitrate 0.1 M standard solution. Store this solution in...
 - 3.4 Silver nitrate 0.004 M standard solution — prepare this solution...
 - 3.5 Potassium chloride 0.1 M standard reference solution. Weigh, to the...
 - 3.6 Potassium chloride 0.004 M standard reference solution — prepare this...
4. APPARATUS
 - 4.1 Potentiometer with silver indicating electrode and calomel reference electrode, sensitivity...
 - 4.2 Bridge, containing a saturated potassium nitrate solution, connected to the...
 - 4.3 etic stirrer, with a Teflon-coated rod.
 - 4.4 Microburette with fine-pointed tip, graduated in 0.01 ml divisions.
5. PROCEDURE
 - 5.1 ***Standardisation of the silver nitrate solution***
 - 5.2 ***Blank test***
 - 5.3 ***Check test***
 - 5.4 Determination Take a portion of sample in the range of...
6. EXPRESSION OF RESULTS

14g.

DETERMINATION OF COPPER

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
 - 3.1 Hydrochloric acid (density at 20° C $\rho = 1.18$ g/ml)....
 - 3.2 Hydrochloric acid, 6 M solution.
 - 3.3 Hydrochloric acid, 0.5 M solution.
 - 3.4 Ammonium nitrate.
 - 3.5 Hydrogen peroxide, 30%.
 - 3.6 Copper solution (stock): weigh, to the nearest 0.001 gram, 1...
4. APPARATUS
5. PROCEDURE
 - 5.1 ***Preparation of the solution for analysis***
 - 5.2 ***Blank solution***
 - 5.3 ***Determination***
 - 5.4 ***Measurement***
6. EXPRESSION OF RESULTS

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15.

EXTRACTION OF TOTAL CALCIUM, TOTAL MAGNESIUM, TOTAL SODIUM AND TOTAL SULFUR IN THE FORM OF SULFATES

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Diluted hydrochloric acid; One volume of hydrochloric acid (p =...
5. APPARATUS
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Test sample. Calcium, magnesium, sodium and sulfur in the form...
- 7.2 Preparation of the solution. Add approximately 400 ml of water...

16.

EXTRACTION OF TOTAL SULFUR

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Diluted hydrochloric acid: One volume of hydrochloric acid (p =...
- 4.2 Sodium hydroxide solution, NaOH, 30% minimum (p = 1.33)
- 4.3 Hydrogen peroxide solution, 30% w/w.
- 4.4 Aqueous solution of barium chloride BaCl₂.2H₂O, 122 gram per litre....
5. APPARATUS
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Test sample. Weigh out to within 1 mg a quantity...
- 7.2 Oxidation. Add 20 ml of sodium hydroxide solution (4.2) and...
- 7.3 Preparation of the solution to be analysed. Add approximately 50...

17.

EXTRACTION OF WATER-SOLUBLE CALCIUM, MAGNESIUM, SODIUM AND SULFUR (IN THE FORM OF SULFATES)

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Test sample. (a) Where fertilisers contain no sulfur or where...
- 7.2 Preparation of the solution. Add approximately 400 ml of water...

18.

EXTRACTION OF WATER — SOLUBLE SULFUR

1. SCOPE

2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Diluted hydrochloric acid: One volume of hydrochloric acid ($p = \dots$)
5. APPARATUS
- 5.1 500 ml graduated Stohmann flask.
- 5.2 Rotary shaker, 30 to 40 turns per minute.
- 5.3 Electric hot plate with adjustable temperature.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Test sample. (a) Where fertilisers contain a maximum of 3%...
- 7.2 Preparation of the solution. Add approximately 400 ml of water....
- 7.3 Oxidation of the aliquot portion to be analysed. Take an...

19.

EXTRACTION AND DETERMINATION OF ELEMENTAL SULFUR

WARNING

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
5. APPARATUS
- 5.1 100 ml extraction flask with ground glass stopper.
- 5.2 Soxhlet apparatus.
- 5.3 Vacuum rotary evaporator.
- 5.4 Electric oven, fan assisted, set at $90 \pm 2^\circ \text{C}$.
- 5.5 Petri dishes, five to seven centimetres in diameter, not exceeding...
- 5.6 Electric hot plate with adjustable temperature.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
- 7.1 Test sample. Weigh out 5 – 10 g of the...
- 7.2 Extraction of the sulfur. Wash thoroughly the contents of the...
- 7.3 Determination of the purity of the elemental sulfur. Certain substances...
8. EXPRESSION OF RESULTS

20.

*MANGANIMETRIC DETERMINATION OF EXTRACTED CALCIUM
FOLLOWING PRECIPITATION IN THE FORM OF OXALATE*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Diluted hydrochloric acid: One volume of hydrochloric acid ($p = \dots$)
- 4.2 1:10 dilute sulfuric acid: One volume of sulfuric acid ($p = \dots$)
- 4.3 1:1 dilute ammonia solution: One volume of ammonia ($p = \dots$)
- 4.4 Saturated solution of ammonium oxalate $[(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}]$ at ambient temperature (approximately...)
- 4.5 Citric acid solution, 30% (m/v).
- 4.6 Ammonium chloride solution, 5% (m/v).
- 4.7 Solution of bromothymol blue in 95% ethanol, 0.1% (m/v).

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- 4.8 Solution of bromocresol green in 95% ethanol, 0.04% (m/v).
- 4.9 Standard solution of potassium permanganate, 0.02 M.
5. APPARATUS
- 5.1 Filter crucible with 5 to 20 μ porosity sintered glass.
- 5.2 Hot water bath.
6. PREPARATION OF THE ALIQUOT PORTION TO BE ANALYSED
7. PRECIPITATION OF THE CALCIUM OXALATE
8. TITRATION OF THE OXALATE PRECIPITATE
9. EXPRESSION OF RESULTS

21.

DETERMINATION OF MAGNESIUM BY ATOMIC ABSORPTION SPECTROMETRY

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Hydrochloric acid, 1 M solution.
- 4.2 Hydrochloric acid, 0.5 M solution.
- 4.3 Standard solution of magnesium, 1.00 mg per ml.
- 4.4 Strontium chloride solution. Dissolve 75 g of strontium chloride (SrCl₂·6H₂O)...
5. APPARATUS
- 5.1 Spectrometer fitted for atomic absorption, with a magnesium lamp, set...
- 5.2 Air-acetylene flame.
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
7. PROCEDURE
- 7.1 If the fertiliser has a declared magnesium (Mg) content of...
- 7.2 Using a pipette, take 10 ml of the extraction solution...
- 7.3 Dilute this solution (7.2) with the 0.5 M hydrochloric acid...
- 7.4 Preparation of blank solution. Prepare a blank solution by repeating...
- 7.5 Preparation of calibration solutions. By diluting the standard solution (4.3)...
- 7.6 Measurement. Set up the spectrometer (5.1) at a wavelength of...
8. EXPRESSION OF RESULTS

22.

DETERMINATION OF MAGNESIUM BY COMPLEXOMETRY

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Standard 0.05 M solution of magnesium: (4.1.1) Dissolve 1.232 g...
- 4.2 0.05 M solution of EDTA. Weigh out 18.61 g of...
- 4.3 0.05 molar standard solution of calcium. Weigh out 5.004 g...
- 4.4 Calcein indicator. Carefully mix in a mortar one gram of...
- 4.5 Calcon carbonic acid indicator. Dissolve 400 mg of calcon carbonic...
- 4.6 Eriochrome black — T indicator. Dissolve 300 mg of Eriochrome...
- 4.7 Potassium cyanide solution. Aqueous solution of KCN at 2%.
(CAUTION:...
- 4.8 Solution of potassium hydroxide and potassium cyanide. Dissolve 280 g...

- 4.9 Buffer solution, pH 10.5. In a 500 ml graduated flask,...
- 4.10 Diluted hydrochloric acid: One volume of hydrochloric acid ($\rho = \dots$)
- 4.11 Hydrochloric acid solution approximately 0.5 M.
- 4.12 Hydrochloric acid solution approximately 1 M.
- 4.13 Sodium hydroxide solution 5 M.
- 5. APPARATUS
 - 5.1 Magnetic or mechanical stirrer.
 - 5.2 pH meter.
- 6. CONTROL TEST
- 7. PREPARATION OF THE SOLUTION TO BE ANALYSED
- 8. DETERMINATION
 - 8.1 Aliquot portions to be taken. Take aliquot portions of the...
 - 8.2 Titration in the presence of Eriochrome black-T. Pipette an aliquot...
 - 8.3 Titration in the presence of calcein or of calcon carbonic...
- 9. EXPRESSION OF RESULTS
- 10. REMARKS
 - 10.1 The stoichiometric EDTA-metal ratio in the complexometric analyses is always...
 - 10.2 Complexometric indicators are often sensitive to air. The solution may...
 - 10.3 The metal-indicator complexes are often relatively stable and it may...
 - 10.4 The colour change of the indicator must not be observed...
 - 10.5 This analysis requires a certain amount of experience. The task...
 - 10.6 If an EDTA solution of guaranteed strength is used (Titrisol,...
 - 10.7 The solutions containing potassium cyanide must not be poured down...

23.

DETERMINATION OF SULFATES

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Diluted hydrochloric acid: One volume of hydrochloric acid ($\rho = \dots$)
 - 4.2 Barium chloride solution $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$: 122 grams per litre.
 - 4.3 Silver nitrate solution: 5 grams per litre.
- 5. APPARATUS
 - 5.1 Crucibles.
 - 5.2 Hot water bath.
 - 5.3 Drying oven set at $105^\circ \text{C} \pm 1^\circ \text{C}$.
 - 5.4 Electric furnace set at $800^\circ \text{C} \pm 50^\circ \text{C}$.
- 6. PROCEDURE
 - 6.1 Sampling of the solution. Pipette an aliquot portion of one...
 - 6.2 Preparation of the precipitate. Bring the solution to the boil....
 - 6.3 Incineration and weighing of the precipitate. Place the filter paper...
- 7. EXPRESSION OF RESULTS

24.

DETERMINATION OF THE SODIUM EXTRACTED

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE

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4. REAGENTS
 - 4.1 Diluted hydrochloric acid: One volume of hydrochloric acid ($\rho = \dots$)
 - 4.2 Aluminium nitrate $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$.
 - 4.3 Caesium chloride, CsCl .
 - 4.4 Anhydrous sodium chloride, NaCl .
 - 4.5 Caesium chloride and aluminium nitrate solution. Dissolve in water 50...
 - 4.6 Standard sodium solution of 1 mg/ml of Na. Dissolve in...
5. APPARATUS
6. CALIBRATION SOLUTIONS
 - 6.1 Pipette 10 ml of standard solution (4.6) into a 250...
 - 6.2 Using a burette place 0, 5, 10, 15, 20, 25...
7. PREPARATION OF SOLUTIONS TO BE MEASURED
8. DETERMINATION
9. CALCULATION OF RESULTS

25.

TRACE ELEMENTS AT A CONCENTRATION LESS THAN 10%

25a.

EXTRACTION OF TOTAL TRACE ELEMENTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Dilute hydrochloric acid (HCl) solution, about 6 M: Mix 1...
 - 4.2 Concentrated ammonia solution (NH_4OH , $\rho = 0.9\text{g/ml}$)
5. APPARATUS
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
 - 7.1 Test sample Take a quantity of fertiliser weighing between 2...
 - 7.2 Preparation of the solution If necessary moisten the sample with...
8. DETERMINATION

25b.

EXTRACTION OF WATER-SOLUBLE TRACE ELEMENTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Dilute hydrochloric acid (HCl) solution, above 6 M: Mix 1...
5. APPARATUS
 - 5.1 Rotary shaker set at about 35 to 40 rpm.
 - 5.2 pH-meter. (Note) Where the boron content of the extract is...
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
 - 7.1 Test sample Take a quantity of fertiliser weighing between 2...
 - 7.2 Preparation of the solution Add about 200 ml of water...
 - 7.3 Preparation of the test solution Filter immediately into a clean,...
8. DETERMINATION

25c.

REMOVAL OF ORGANIC COMPOUNDS FROM FERTILISER EXTRACTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Dilute hydrochloric acid (HCl) solution, about 0.5 M: Mix 1...
- 4.2 Hydrogen peroxide solution (30% H₂O₂ ρ = 1.11 g/ml), free...
5. APPARATUS
6. PROCEDURE

25d.

*DETERMINATION OF TRACE ELEMENTS IN FERTILISER EXTRACTS
BY ATOMIC ABSORPTION SPECTROMETRY (GENERAL PROCEDURE)*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Dilute hydrochloric acid solution (HCl), about 6 M: Mix one...
- 4.2 Dilute hydrochloric acid solution (HCl), about 0.5 M: Mix one...
- 4.3 Lanthanum salt solutions (10 g of La per litre). This...
- 4.4 Calibration solutions For the preparation of these, see the individual...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
- 6.1 Preparation of extract solutions of the trace elements to be...
- 6.2 Treatment of the test solution Dilute an aliquot portion of...
7. PROCEDURE
- 7.1 Preparation of a blank solution Prepare a blank solution by...
- 7.2 Preparation of calibration solutions From the working calibration solution prepared...
- 7.3 Determination Prepare the spectrometer (5) for the determination and adjust...
8. EXPRESSION OF RESULTS

25e.

*DETERMINATION OF BORON IN FERTILISER EXTRACTS
BY MEANS OF SPECTROMETRY WITH AZOMETHINE-H*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 EDTA buffer solution Place in a 500 ml volumetric flask...
- 4.2 Azomethine-H solution Place in a 200 ml volumetric flask —...
- 4.3 Boron calibration solutions (4.3.1) Boron stock solution (100 µg/ml)
Dissolve...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
- 6.1 Preparation of the boron solution See Methods 25a and/or 25b...

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- 6.2 Preparation of the test solution Dilute an aliquot portion of...
- 6.3 Preparation of the correction solution. If the test solution (6.2)...
- 7. PROCEDURE
- 7.1 Preparation of the blank solution Prepare a blank solution by...
- 7.2 Preparation of the calibration solutions Transfer 0, 5, 10, 15,...
- 7.3 Colour development Transfer 5 ml of the calibration solutions (7.2),...
- 7.4 Determination Measure the absorbance of the solutions obtained at 7.3...
- 8. EXPRESSION OF RESULTS

25f.

*DETERMINATION OF COBALT IN FERTILISER
EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY*

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6 M. See Method 25d (4.1)....
 - 4.2 Hydrochloric acid solution, about 0.5 M. See Method 25d (4.2)....
 - 4.3 Lanthanum salt solutions (10 g of La per litre) See...
 - 4.4 Cobalt calibration solutions. (4.4.1) Cobalt stock solution (1,000 µg/ml)
In...
- 5. APPARATUS
- 6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Cobalt extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution See Methods 25d (6.2). The...
- 7. PROCEDURE
 - 7.1 Preparation of blank solution See Method 25d (7.1). The blank...
 - 7.2 Preparation of calibration solutions See Method 25d (7.2). For an...
 - 7.3 Determination See Method 25d (7.3). Prepare the spectrometer (5) for...
- 8. EXPRESSION OF RESULTS

25g.

*DETERMINATION OF COPPER IN FERTILISER
EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY*

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6 M See Method 25d (4.1)....
 - 4.2 Hydrochloric acid solution, about 0.5 M See Method 25d (4.2)....
 - 4.3 Hydrogen peroxide solution (30% H₂O, p = 1.11 g/ml), free...
 - 4.4 Copper calibration solutions (4.4.1) Copper stock solution (1,000 µg/ml)
In...
- 5. APPARATUS
- 6. PREPARATION FOR THE SOLUTION TO BE ANALYSED
 - 6.1 Copper extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution See Method 25d (6.2).
- 7. PROCEDURE
 - 7.1 Preparation of blank solution See Method 25d (7.1).
 - 7.2 Preparation of calibration solutions See Method 25d (7.2). For an...

- 7.3 Determination See Method 25d (7.3). Prepare the spectrometer (5) for...
- 8. EXPRESSION OF RESULTS

25h.

*DETERMINATION OF IRON IN FERTILISER EXTRACTS
BY ATOMIC ABSORPTION SPECTROMETRY*

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6M. See Method 25d (4.1).
 - 4.2 Hydrochloric acid solution, about 0.5 M See Method 25d (4.2)....
 - 4.3 Hydrogen peroxide solution (30% H₂O₂ p = 1.11 g/ml) free...
 - 4.4 Lanthanum salt solutions (10 g of La per litre) See...
 - 4.5 Iron calibration solutions (4.5.1) Iron stock solution (1,000 µg/ml) In...
- 5. APPARATUS
- 6. PREPARATION FOR THE SOLUTION TO BE ANALYSED
 - 6.1 Iron extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution See Method 25d (6.2). The...
- 7. PROCEDURE
 - 7.1 Preparation of blank solution See Method 25d (7.1). The test...
 - 7.2 Preparation of calibration solutions See Method 25d (7.2). For an...
 - 7.3 Determination See Method 25d (7.3). Prepare the spectrometer (5) for...
- 8. EXPRESSION OF RESULTS

25i

*DETERMINATION OF MANGANESE IN FERTILISER
EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY*

- 1. SCOPE
- 2. FIELD OF APPLICATION
- 3. PRINCIPLE
- 4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6 M See Method 25d (4.1)....
 - 4.2 Hydrochloric acid solution, about 0.5 M See Method 25d (4.2)....
 - 4.3 Lanthanum salt solutions (10 g of La per litre) See...
 - 4.4 Manganese calibration solutions (4.4.1) Manganese stock solution (1,000 µg/ml) In...
- 5. APPARATUS
- 6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Manganese extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution See Method 25d (6.2). The...
- 7. PROCEDURE
 - 7.1 Preparation of the blank solution See Method 25d (7.1). The...
 - 7.2 Preparation of the calibration solutions See Method 25d (7.2). For...
 - 7.3 Determination See Method 25d (7.3). Prepare the spectrometer (5) for...
- 8. EXPRESSION OF RESULTS

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25j.

DETERMINATION OF MOLYBDENUM IN FERTILISER EXTRACTS BY SPECTROMETRY OF A COMPLEX WITH AMMONIUM THIOCYANATE

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Dilute hydrochloric acid solution (HCl), about 6 M See method...
 - 4.2 Copper solution (70 mg/l) in 1.5 M hydrochloric acid Dissolve...
 - 4.3 Ascorbic acid solution (50 g/l) Dissolve 50 g of ascorbic...
 - 4.4 n-butyl acetate
 - 4.5 Ammonium thiocyanate solution, 0.2 M Dissolve 15.224 g of NH₄SCN...
 - 4.6 Stannous chloride solution (50 g/l) in 2 M hydrochloric acid...
 - 4.7 Molybdenum calibration solutions (4.7.1) Molybdenum stock solution (500 µg/ml) Dissolve...
5. APPARATUS
 - 5.1 Spectrometer fitted for molecular absorption with cells having a 20...
 - 5.2 200 or 250 ml separating funnels.
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Molybdenum extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution Dilute an aliquot portion of...
7. PROCEDURE
 - 7.1 Preparation of the blank solution Prepare a blank solution by...
 - 7.2 Preparation of the series of calibration solutions Prepare a series...
 - 7.3 Development and separation of the complex To each separating funnel...
 - 7.4 Determination Measure the absorbencies of the solutions obtained at 7.3...
8. EXPRESSION OF RESULTS

25k.

DETERMINATION OF ZINC IN FERTILISER EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6 M See Method 25d (4.1)...
 - 4.2 Hydrochloric acid solution, about 0.5 M See Method 25d (4.2)...
 - 4.3 Lanthanum salt solutions (10 g of La per litre) See...
 - 4.4 Zinc calibration solutions (4.4.1) Zinc stock solution (1,000 µg/ml) In...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Zinc extract solution See Methods 25a and/or 25b and, if...
 - 6.2 Preparation of the test solution See Method 25d (6.2). The...
7. PROCEDURE
 - 7.1 Preparation of the blank solution See Method 25d (7.1). The...
 - 7.2 Preparation of the calibration solutions See Method 25d (7.2). For...
 - 7.3 Determination See Method 25d (7.3). Prepare the spectrometer (5) for...
8. EXPRESSION OF RESULTS

26.

TRACE ELEMENTS AT A CONCENTRATION GREATER THAN 10%

26a.

EXTRACTION OF TOTAL TRACE ELEMENTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Diluted hydrochloric acid (HCl) solution, about 6M Mix 1 volume...
 - 4.2 Concentrated ammonia solution (NH₄OH, p = 0.9 g/ml)
5. APPARATUS
 - 5.1 Electric hotplate with variable temperature control.
 - 5.2 pH meter (Note) Where the boron content of an extract...
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
 - 7.1 Test sample Take a quantity of fertiliser weighing 1 or...
 - 7.2 Preparation of the solution If necessary moisten the sample with...
8. DETERMINATION

26b.

EXTRACTION OF WATER — SOLUBLE TRACE ELEMENTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Diluted hydrochloric acid (HCl) solution, about 6 M Mix 1...
5. APPARATUS
 - 5.1 Rotary shaker set at about 35 to 40 rpm.
6. PREPARATION OF THE SAMPLE
7. PROCEDURE
 - 7.1 Test sample Take a quantity of fertiliser weighing 1 or...
 - 7.2 Preparation of the solution Add about 400 ml of water...
 - 7.3 Preparation of the test solution Filter immediately into a clean,...
8. DETERMINATION

26c.

REMOVAL OF ORGANIC COMPOUNDS FROM FERTILISER EXTRACTS

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Diluted hydrochloric acid solution, about 0.5 M Mix 1 volume...
 - 4.2 Hydrogen peroxide solution (30% H₂O₂, p = 1.11 g/ml), free...
5. APPARATUS
6. PROCEDURE

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26d.

*DETERMINATION OF TRACE ELEMENTS IN FERTILISER
EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY*

(GENERAL PROCEDURE)

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Diluted hydrochloric acid solution (HCl), about 6 M Mix one...
 - 4.2 Diluted hydrochloric acid solution (HCl), about 0.5 M Mix one...
 - 4.3 Lanthanum salt solutions (10 g of La per litre) This...
 - 4.4 Calibration solutions For the preparation of these, see the individual...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Preparation of extract solutions containing the elements to be determined....
 - 6.2 Treatment of the test solution Dilute an aliquot portion of...
7. PROCEDURE
 - 7.1 Preparation of a blank solution. Prepare a blank solution by...
 - 7.2 Preparation of calibration solutions From the working calibration solution prepared...
 - 7.3 Determination Prepare the spectrometer (5) for the determination and adjust...
8. EXPRESSION OF RESULTS

26e.

*DETERMINATION OF BORON IN FERTILISER
EXTRACTS BY MEANS OF ACIDIMETRIC TITRATION*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Methyl red indicator solution Dissolve 0.1 g of methyl red...
 - 4.2 Diluted hydrochloric acid solution, about 0.5 M Mix 1 volume...
 - 4.3 Sodium hydroxide solution, about 0.5 M Must be free of...
 - 4.4 Standard sodium hydroxide solution, about 0.025 M Must be free...
 - 4.5 Boron calibration solution (100 µg/ml B) Dissolve 0.5719 g of...
 - 4.6 D-mannitol (C₆H₁₄O₆) powder.
 - 4.7 Sodium chloride (NaCl).
5. APPARATUS
 - 5.1 pH meter with glass electrode
 - 5.2 Magnetic stirrer
 - 5.3 400 ml beaker with teflon rod
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Preparation of the boron solution See Methods 26a, 26b and,...
7. PROCEDURE
 - 7.1 Determination Place in a 400 ml beaker (5.3) an aliquot...
8. BLANK SOLUTION
9. BORON (B) VALUE OF THE SODIUM HYDROXIDE SOLUTION (4.4)
10. EXPRESSION OF RESULTS

26f.

DETERMINATION OF COBALT IN FERTILISER EXTRACTS BY THE GRAVIMETRIC METHOD WITH 1-NITROSO-2-NAPHTHOL

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Hydrogen peroxide solution (H₂O₂ ρ = 1.11 g/ml) 30%
 - 4.2 Sodium hydroxide solution, about 2 M Dissolve 8 g of...
 - 4.3 Diluted hydrochloric acid solution, about 6 M Mix one volume...
 - 4.4 Acetic acid (99.7% CH₃COOH) (ρ = 1.05 g/ml).
 - 4.5 Acetic acid solution (1:2), about 6 M Mix one volume...
 - 4.6 Solution of 1-nitroso-2-naphthol in 100 ml of acetic acid (4.4)....
5. APPARATUS
 - 5.1 Filter crucible P 16/ISO 4793, porosity 4, capacity 30 or...
 - 5.2 Drying oven at 130 °C
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Preparation of the cobalt solution See Methods 26a or 26b....
 - 6.2 Preparation of the solution to be analysed Place the aliquot...
7. PROCEDURE
8. EXPRESSION OF RESULTS

26g.

DETERMINATION OF COPPER IN FERTILISER EXTRACTS BY THE TITRIMETRIC METHOD

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Nitric acid (HNO₃, ρ = 1.40 g/ml).
 - 4.2 Urea [(NH₂)₂ C O].
 - 4.3 Ammonium bifluoride (NH₄HF₂) solution (10 % w/v) Keep the solution...
 - 4.4 Ammonium hydroxide solution (1 + 1) Mix 1 volume of...
 - 4.5 Sodium thiosulfate standard solution Dissolve 7.812 g of sodium thiosulfate...
 - 4.6 Potassium iodide (KI).
 - 4.7 Potassium thiocyanate (KSCN) solution (25 % w/v) Keep this solution...
 - 4.8 Starch solution (about 0.5 %) Place 2.5 g of starch...
5. PREPARATION OF THE SOLUTION TO BE ANALYSED
6. PROCEDURE
 - 6.1 Preparation of the solution for titration Place an aliquot portion...
 - 6.2 Titration of the solution Place the Erlenmeyer flask on a...
7. EXPRESSION OF RESULTS

26h.

DETERMINATION OF IRON IN FERTILISER EXTRACTS BY ATOMIC ABSORPTION SPECTROMETRY

1. SCOPE
2. FIELD OF APPLICATION

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3. PRINCIPLE
4. REAGENTS
 - 4.1 Hydrochloric acid solution, about 6 M See Method 26d, (4.1)...
 - 4.2 Hydrochloric acid solution, about 0.5 M See Method 26d, (4.2)....
 - 4.3 Hydrogen peroxide solution (30% H₂O₂ ρ = 1.11 g/ml) free...
 - 4.4 Lanthanum salt solutions (10 g of La per litre) See...
 - 4.5 Iron calibration solution (4.5.1) Iron stock solution (1,000 µg/ml) In...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Iron extract solution See Methods 26a and/or 26b and, if...
 - 6.2 Preparation of the test solution See Method 26d, (6.2). The...
7. PROCEDURE
 - 7.1 Preparation of the blank solution See Method 26d (7.1). The...
 - 7.2 Preparation of calibration solutions See Method 26d, (7.2). For an...
 - 7.3 Determination See Method 26d, (7.3). Prepare the spectrometer (5) for...
8. EXPRESSION OF RESULTS

26i.

DETERMINATION OF MANGANESE IN FERTILISER EXTRACTS BY TITRATION

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Concentrated sulfuric acid (H₂SO₄, ρ = 1.84 g/ml).
 - 4.2 Sulfuric acid, about 9 M Carefully mix 1 volume of...
 - 4.3 Nitric acid, 6 M Mix 3 volumes of nitric acid...
 - 4.4 Nitric acid, 0.3 M Mix 1 volume of 6 M...
 - 4.5 Sodium bismuthate (NaBiO₃) (85 %).
 - 4.6 Kieselguhr.
 - 4.7 Orthophosphoric acid, 15 M (H₃PO₄, ρ = 1.71 g/ml).
 - 4.8 Ferrous sulfate solution, 0.15 M Dissolve 41.6 g of ferrous...
 - 4.9 Potassium permanganate solution, 0.02 M Weigh out 3.160 g of...
5. APPARATUS
 - 5.1 Filter crucible P16/ISO 4793, porosity 4, capacity 50 ml, mounted...
 - 5.2 Magnetic stirrer.
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
 - 6.1 Manganese extract solution See Methods 26a and 26b. If it...
 - 6.2 In the absence of chloride ions, place an aliquot portion...
 - 6.3 If chloride ions are present, it is necessary to remove...
7. PROCEDURE
8. EXPRESSION OF RESULTS

26j.

DETERMINATION OF MOLYBDENUM IN FERTILISER EXTRACTS BY THE GRAVIMETRIC METHOD WITH 8-HYDROXYQUINOLINE

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
 - 4.1 Sulfuric acid solution, approximately 1 M Carefully pour 55 ml...

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- 4.2 Diluted ammonia solution (1:3) Mix 1 volume of concentrated ammonia...
- 4.3 Diluted acetic acid solution (1:3) Mix 1 volume of concentrated...
- 4.4 Solution of disodium salt of ethylene diamine tetraacetic acid (EDTA)...
- 4.5 Buffer solution In a 100 ml volumetric flask, dissolve 15...
- 4.6 8-hydroxyquinoline (oxine) solution In a 100 ml volumetric flask dissolve...
5. APPARATUS
- 5.1 Filter crucible P16/ISO 4793, porosity 4, capacity 30 ml.
- 5.2 pH meter with glass electrode.
- 5.3 Drying oven at 130 to 135°C.
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
- 6.1 Preparation of the molybdenum solution. See Methods 26a and 26b....
7. PROCEDURE
- 7.1 Preparation of the test solution Place an aliquot portion containing...
- 7.2 Obtaining and washing the precipitate Obtaining the precipitate Heat the...
- 7.3 Weighing the precipitate Dry the precipitate at 130 to 135°C...
8. EXPRESSION OF RESULTS

26k.

*DETERMINATION OF ZINC IN FERTILISER EXTRACTS
BY ATOMIC ABSORPTION SPECTROMETRY*

1. SCOPE
2. FIELD OF APPLICATION
3. PRINCIPLE
4. REAGENTS
- 4.1 Hydrochloric acid solution, about 6 M See Method 26d (4.1)....
- 4.2 Hydrochloric acid solution, about 0.5 M See Method 26d (4.2)....
- 4.3 Lanthanum salt solutions (10 g of La per litre) See...
- 4.4 Zinc calibration solutions (4.4.1) Zinc stock solution (1000 µg/ml) In...
5. APPARATUS
6. PREPARATION OF THE SOLUTION TO BE ANALYSED
- 6.1 Zinc extract solution See Methods 25a and/or 26b.
- 6.2 Preparation of the test solution See Method 26d, (6.2). The...
7. PROCEDURE
- 7.1 Preparation of the blank solution. See Method 26d. (7.1). The...
- 7.2 Preparation of the calibration solutions See Method 26d (7.2). For...
- 7.3 Determination See Method 26d (7.3). Prepare the spectrometer (5) for...
8. EXPRESSION OF RESULTS

— PART II

1. **General**
2. **Reagents**
3. **Water**
4. Apparatus
5. **Methods of Analysis**
1. Preparation of the sample for analysis
2. Determination of moisture
3. Determination of total nitrogen — chromium powder reduction method
4. Determination of urea
5. Determination of potassium — gravimetric method
6. Determination of the neutralising value in liming materials
7. Determination of fineness of products other than potassic basic slag...
8. Determination of fineness of potassic basic slag

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9. Determination of fineness of certain lime products by wet sieving....

1.

PREPARATION OF THE SAMPLE FOR ANALYSIS

1. INTRODUCTION
2. SCOPE AND FIELD OF APPLICATION
3. PRINCIPLE
- 3.1 **Solid fertilisers:**
- 3.2 **Fluid fertilisers:**
4. APPARATUS
- 4.1 Sample grinder capable of grinding the fertiliser to pass the...
- 4.2 Mortar and pestle of suitable material and size.
- 4.3 Sieves having square apertures of 0.18 mm, 0.5 mm and...
- 4.4 Sample containers of non-corrodible materials, with air-tight closures.
5. PROCEDURE
- WARNING
- 5.1 WARNING
- 5.2 Place the prepared sample in a clean container (4.4) and...
- 5.3 Before taking each test portion for analysis, the whole sample...
- 5.4 If the sample contains foreign matter which cannot be ground...
6. SPECIAL CASES
- 6.1 **Samples not to be ground**
- 6.2 **Products which may be difficult to grind mechanically, including products with abnormal moisture or products which become doughy through grinding**
- 6.3 **Organic materials**
- 6.4 **Fertilisers comprising several different materials**
7. FLUID FERTILISERS

2.

DETERMINATION OF MOISTURE

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. APPARATUS
- 3.1 Suitable containers with lids ensuring air-tight closure; the dimensions should...
- 3.2 Electrically heated oven, suitably ventilated and capable of being maintained...
4. PREPARATION OF SAMPLE
5. PROCEDURE
6. EXPRESSION OF RESULT

3.

DETERMINATION OF TOTAL NITROGEN CHROMIUM POWDER REDUCTION METHOD

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
- 3.1 Sodium hydroxide solution: 40 g per 100 ml, ammonia free....

- 3.2 Sulfuric acid, 0.05 M solution.
- 3.3 Sulfuric acid, 0.1 M solution.
- 3.4 Sulfuric acid, 0.25 M solution.
- 3.5 Sodium hydroxide, 0.2 M solution, carbonate free.
- 3.6 Chromium metal powder, 100 mesh, low nitrogen content.
- 3.7 Anti-bump granules of pumice stone, washed in hydrochloric acid and...
- 3.8 Anti-foaming agent, paraffin wax.
- 3.9 Sulfuric acid ($\rho = 1.84$ g/ml).
- 3.10 Hydrochloric acid ($\rho = 1.18$ g/ml).
- 3.11 Catalyst mixture: 1,000 g potassium sulfate and 50 g copper...
- 3.12 Indicator solutions: (3.12.1) Mixed indicator: mix 50 ml of 2...
- 3.13 pH indicator paper, wide range.
4. APPARATUS
5. PREPARATION OF SAMPLE
6. PROCEDURE
- 6.1 **Reduction**
- 6.2 **Hydrolysis, when the fertiliser is known not to contain organic matter**
- 6.3 **Digestion, when the fertiliser is known to contain organic matter**
- 6.4 **Distillation**
- 6.5 **Blank test**
7. EXPRESSION OF RESULTS

4.

DETERMINATION OF UREA

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
- 3.1 Activated charcoal.
- 3.2 Carrez solution I: dissolve 21.9 g zinc acetate dihydrate in...
- 3.3 Carrez solution II: 10.6 g potassium ferrocyanide per 100 ml...
- 3.4 Hydrochloric acid solution, 0.02 M.
- 3.5 Sodium acetate solution: 136 g sodium acetate trihydrate per litre....
- 3.6 4-dimethylaminobenzaldehyde solution: dissolve 1.6 g of 4-dimethylaminobenzaldehyde (4-DMAB) in 100...
- 3.7 Urea standard solution: 1.0 g per 100 ml (1 ml...
4. APPARATUS
- 4.1 Mechanical shaker.
- 4.2 Spectrometer with 10 mm cells.
5. PREPARATION OF SAMPLE
6. PROCEDURE
- 6.1 **Preparation of the solution for analysis**
- 6.2 **Determination**
- 6.3 **Calibration curve**
7. EXPRESSION OF RESULTS

5.

DETERMINATION OF POTASSIUM — GRAVIMETRIC METHOD

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS

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3. <1 Formaldehyde, 25 – 35% solution, filtered if necessary before use.
- 3.2 Potassium chloride.
- 3.3 Sodium hydroxide, 10 M solution. Care should be taken to...
- 3.4 Indicator solution: dissolve 0.5 g phenolphthalein in 100 ml 90%...
- 3.5 EDTA solution: 4 g of the dihydrated disodium salt of...
- 3.6 STPB solution: dissolve 32.5 g sodium tetraphenylborate in 480 ml...
- 3.7 Liquid for washing: dilute 20 ml of the STPB solution...
- 3.8 Hydrochloric acid ($\rho = 1.18$ g/ml).
4. APPARATUS
- 4.1 Filter crucibles with a porosity of 5 to 20 microns....
- 4.2 Oven regulated to 120°C10°C.
5. PREPARATION OF SAMPLE
6. PROCEDURE
- 6.1 ***Preparation of the solution for analysis***
- 6.2 ***Determination***
- 6.3 ***Weighing the crucible***
- 6.4 ***Precipitation***
- 6.5 ***Filtering and washing***
- 6.6 ***Drying and weighing***
- 6.7 ***Blank test***
- 6.8 ***Control test***
7. EXPRESSION OF RESULTS

6.

DETERMINATION OF THE NEUTRALISING VALUE IN LIMING MATERIALS

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. REAGENTS
- 3.1 Hydrochloric acid, 0.5 M solution.
- 3.2 Sodium hydroxide, 0.5 M solution (carbonate free).
- 3.3 Phenolphthalein indicator solution: dissolve 0.25 g phenolphthalein in 150 ml...
4. PREPARATION OF SAMPLE
5. PROCEDURE
- 5.1 ***Determination***
6. EXPRESSION OF RESULTS

7.

DETERMINATION OF FINENESS OF PRODUCTS OTHER THAN POTASSIC BASIC SLAG

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. APPARATUS
4. PROCEDURE
- 4.1 ***For sieving through 3.5 mm, 1.0 mm and 150 micron sieves***
- 4.2 ***For sieving through 6.7 mm, 6.3 mm and 5 mm sieves***
- 4.3 ***For sieving through a 45 mm sieve***
- 4.4 ***Sieving***
5. EXPRESSION OF RESULTS

8.

DETERMINATION OF FINENESS OF POTASSIC BASIC SLAG

1. SCOPE AND FIELD OF APPLICATION
2. PRINCIPLE
3. APPARATUS
4. PROCEDURE
- 4.1 **Preparation of the sample**
- 4.2 **Sieving**
5. EXPRESSION OF RESULTS

9.

DETERMINATION OF FINENESS OF CERTAIN LIME PRODUCTS BY WET SIEVING

1. SCOPE
2. PRINCIPLE
3. APPARATUS
- 3.1 Balance, capable of weighing to the nearest 0.01 g
- 3.2 Stainless steel woven wire test sieves 100 mm diameter, complying...
- 3.3 Stainless steel woven wire test sieves complying with ISO 3310...
- 3.4 Oven capable of being controlled at 105°C
- 3.5 Rotating end over end shaker: 35 – 40 turns per...
4. SAMPLING
- 4.1 Procedure for samples with dry matter content <60% Pass the...
- 4.2 Procedure for samples with dry matter content <60% which cannot be...
5. PROCEDURE
6. DRY MATTER CONTENT
7. EXPRESSION OF RESULTS
- 7.1 Original dry mass Calculate the original dry mass (Md) of...
- 7.2 Sieve fraction Calculate the percentage of material retained on each...

APPENDIX TO —
SCHEDULE 2

SCHEDULE 3 —

Explanatory Note