

SLOVENSKI STANDARD SIST ISO 6353-1:1995

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Reagenti za kemijsko analizo - 1. del: Splošne preskusne metode

Reagents for chemical analysis -- Part 1: General test methods

Réactifs pour analyse chimique -- Partie 1: Méthodes générales d'essai

Ta slovenski standard je istoveten z: ISO 6353-1:1982

SIST ISO 6353-1:1995

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Chemical reagents

SIST ISO 6353-1:1995

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION MEXACHAPODHAR OPPAHUSALUN TO CTAHDAPTUSALUNOORGANISATION INTERNATIONALE DE NORMALISATION

Reagents for chemical analysis – Part 1 : General test methods

Réactifs pour analyse chimique - Partie 1 : Méthodes générales d'essai

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6353/1 was developed by NDARD PRE VIEW Technical Committee

ISO/TC 47, Chemistry, and was circulated to the member bodies in May 1980.

It has been approved by the member bodies of the following countries 3-1:1995

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Czechoslovakia	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Mexico	United Kingdom
France	Netherlands	
Germany, F. R.	Philippines	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

> Australia USSR

 \odot International Organization for Standardization, 1982 •

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Reagents for chemical analysis – Part 1 : General test methods

1 Scope and field of application

This part of ISO 6353 specifies general test methods for verifying the compliance of reagents for chemical analysis with the specifications given in other parts of this International Standard.

iTeh STANDARD PREVIEW 3.2 In all reactions or o (standards. or deionized water. Carbo

ISO 31, Quantities, units and symbols.

References

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ISO 758, Liquid chemical products for industrial use <u>Deter-</u>

ISO 759, Volatile organic liquids for industrial use – Determination of dry residue after evaporation on a water bath – General method.

ISO 760, Determination of water — Karl Fischer method (General method).

ISO 918, Volatile organic liquids for industrial use – Determination of distillation characteristics – General method.¹⁾

ISO 1392, Determination of crystallizing point – General method.

ISO 2211, Liquid chemical products – Measurement of colour in Hazen units (platinum-cobalt scale).

ISO 2718, Standard layout for a method of chemical analysis by gas chromatography.

ISO 6685, Chemical products for industrial use – General method for determination of iron content – 1,10-Phenanthroline spectrophotometric method.²)

3 General information

3.1 The nomenclature for chemical compounds used in this International Standard in general conforms to the rules published by the International Union of Pure and Applied Chemistry (IUPAC).

3.2 In all reactions or operations described, use only distilled or deionized water. Carbon dioxide-free water, if required, may be prepared by boiling water of the above grade for about 10 min and protecting from the atmosphere during cooling and storing

3.3 Unless otherwise stated, solutions are aqueous and, dilutions shall be made with water.

3.4 The symbol "%" indicates percentage by mass (m/m), unless otherwise stated.

3.5 The reference number of a general test method, abbreviated GM, as given in the individual tests, refers to the number of the method in clause 5.

3.6 The reagents used shall conform to the specifications in ISO 6353. In the absence of such a specification, reagents of suitable analytical grade be shall be used.

NOTE - Reagents specified in this International Standard are identified R \dots e. g. sodium chloride is R 31.

3.7 Unless otherwise stated, values for density refer to the density at 20 $^{\rm o}{\rm C}.$

3.8 Temperatures are expressed in degrees Celsius (°C).

¹⁾ At present at the stage of draft. (Revision of ISO/R 918.)

²⁾ At present at the stage of draft.

3.9 The following additional abbreviations are used in this International Standard :

AgDDTC	silver diethyldithiocarbamate
APDC	ammonium pyrrolidine-1-carbodithioate
EDTA	ethylenediaminetetraacetic acid, disodium sal
AAS	atomic absorption spectroscopy
FES	flame emission spectroscopy
GC	gas chromatography
SS	standard solution
IS	indicator solution
RS	reagent solution
GM	general test method
R	reagent
MAS	molecular absorption spectrophotometry

3.10 Warning

The physical and chemical properties of the chemicals being handled, in particular those relating to physiological effects, combustibility and explosive tendencies, may be such as to present significant health and safety hazards. Although the degree of risk is extremely variable, it should be assumed, in the absence of specific information to the contrary, that the handle ing of any chemical will involve hazards of this kind.

4.2 Reagent solutions

Prepare the reagent solutions as follows.

4.2.1 Ammonium metavanadate (RS)

Dissolve 2,5 g of ammonium metavanadate in 500 ml of boiling water, cool, add 20 ml of nitric acid solution (R 19), cool and dilute to 1 000 ml. Store in a polyethylene bottle.

4.2.2 Borate standard buffer (RS)

Using the carbon dioxide-free water (see 3.2), dissolve 3,81 g of sodium tetraborate decahydrate and dilute to 1 000 ml. Store protected from atmospheric carbon dioxide.

4.2.3 Calcium hydroxide standard buffer (RS)

Prepare a saturated solution at 25 °C. Determine the calcium hydroxide concentration by titration with standard volumetric hydrochloric acid solution, c(HCI) = 0,1 mol/I, using phenol red (IS 4.3.10) as indicator. The concentration $c[1/2 \text{ Ca}(\text{OH})_2]$ shall be between 0,040 0 and 0,041 2 mol/l. Store protected from atmospheric carbon dioxide and reject the solution as soon any turbidity appears.

4.2.4 Chromic acid (RS)

The provision of exhaustive details in respect of hazards and ISO Bissolve 100 g of chromium trioxide in sulphuric acid solution associated safety procedures is not considered to fall within the stand as sont and and an acid. scope of this International Standard as most manufactures of 231/sist-iso-6353-1-1995

chemicals are very willing to advise prospective users on the handling of their products. In addition, national regulations on the packaging and labelling of hazardous chemicals should ensure that adequate information is given on the hazards associated with the use of chemicals.

Solutions for use in test methods Δ

4.1 Standard solutions

Prepare stock standard solutions (4.1.1) and dilute standard solutions (4.1.2) as follows.

4.1.1 Stock standard solutions

Dissolve the constituents indicated in column 2 of table 1. dilute to the mark in a 1 000 ml one-mark volumetric flask and mix.

It is recommended that all stock standard solutions of inorganic compounds be stored in bottles of suitable plastic material, unless otherwise stated.

4.1.2 Dilute standard solutions

Prepare dilute standard solutions I, II and III at the time of use by diluting the stock standard solutions (4.1.1) in one-mark volumetric flasks of appropriate capacity and in the precise volume ratios 1/10, 1/100, 1/1 000, respectively.

4.2.5 Cobalt(II) chloride (RS)

4.2.5.1 Preparation

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Dissolve 60 g of cobalt(II) chloride hexahydrate in about 900 ml of a mixture of 25 ml of hydrochloric acid solution (R 13) and 975 ml of water and dilute to 1 000 ml with the same mixture. Determine the concentration by the method specified in 4.2.5.2 and adjust it to 59,5 mg of CoCl₂.6H₂O per millilitre using a calculated quantity of diluted hydrochloric acid solution.

4.2.5.2 Titration

Place 5,0 ml of the solution (4.2.5.1), 5 ml of hydrogen peroxide solution (3 %) and 10 ml of sodium hydroxide solution (27 %) in a 200 ml conical flask fitted with a ground glass stopper. With the stopper removed, boil gently for 10 min, allow to cool, add 60 ml of sulphuric acid (10 %) and 2 g of potassium iodide (R 25). Stopper the flask and dissolve the precipitate by shaking gently. Titrate the liberated iodine with standard volumetric sodium thiosulphate solution, $c(Na_2S_2O_3) = 0,1 \text{ mol/l}, \text{ adding 10 drops of the starch solu-}$ tion (IS 4.3.11) towards the end of the titration.

The end-point is reached when the blue colour has just been discharged.

1 ml of sodium thiosulphate solution, $c(Na_2S_2O_3) = 0,1 \text{ mol/l},$ corresponds to 23,79 mg of CoCl₂.6H₂O.

Acetabelyde 1,00 g of CHgCHO 0.001 g of CHgCHO Atuminium 17,00 g of CHgCHO 0.001 g of AI Ammonium 2,97 g of NH4,0 (R 5) 0.001 g of AI Arranci 1,32 g of As ₂ O ₂ dissolved in 3 ml of NaOH solution 127 %I by warming. 0.001 g of A Barium 1.00 g of Bi dissolved in 6 ml of HNO ₂ [R 19], and nitrous gases removed by bolling. 0.001 g of Bi O Barnuth 1.01 g of KRO ₂ . 0.001 g of Cap.2H ₂ O 0.001 g of BiO Calcium 3.67 g of CAD ₂ 2H ₂ O. Atternativey. 2.50 g of CaCO ₂ dissolved in 25 ml of HC110 %) solution on and CO ₂ removed by bolling. 0.001 g of Cap.2H ₂ O. Atternativey. 2.50 g of CaCO ₂ dissolved in 25 ml of HC110 %) solution on and CO ₂ removed by bolling. 0.001 g of Cap.2H ₂ O. atternativey. 2.50 g of CaCO ₂ dissolved in 25 ml of HC110 %) solution on and CO ₂ removed by bolling. 0.001 g of CD Carbonati 2.41 g of Nactons (R 22 corresponding to 5.0 g of CO. weighed into a 100 ml one mark. 0.001 g of CD Carbonati 1.43 g of AxCons (R 32) 0.001 g of CD 0.001 g of CD Choine 2.88 g of Klop (MgC1 ANDARD-PREVIEW 0.001 g of CD Choine 2.88 g of Klop (MgC1 ANDARD-PREVIEW 0.001 g of CD Choine 2.88 g of Klop (MgC1 ANDARD-PREVIEW 0.001 g of CD	Reagent name	Mass of substance required to prepare 1 000 ml of solution	1 ml of solution corresponds to
Aluminum 17,80 g of KAIIS0,42:12% pt + 10 ml H ₂ SO ₄ (25 %) 0.001 g of Al Ammonium 2,87 g of NA ₂ O ₄ dissolved in 3 ml of NAOH solution 127 %i by warning. 0.001 g of As Barium 1,78 g of SaC ₂ O ₄ dissolved in 3 ml of NAOH solution 127 %i by warning. 0.001 g of Ra Barium 1.09 g of KalSO ₄ O ₄ (18 6) 0.001 g of Fa Biromate 1.31 g of KBrO ₂ O ₄ (18 0) 0.001 g of Bi Calcium 0.001 g of KBr 0.001 g of Bi Calcium 0.001 g of CaO 0.001 g of CaO Carbonare 2.41 g of Na ₂ CO ₃ (18 30) 0.001 g of CaO Carbonare 2.41 g of Na ₂ CO ₃ (18 30) 0.001 g of CaO Carbonare 2.41 g of Na ₂ CO ₃ (18 30) 0.001 g of CaO Carbonare 2.41 g of Na ₂ CO ₃ (18 30) 0.001 g of CaO Carbonare 1.48 g of Na ₂ CO ₃ (18 30) 0.001 g of CaO Carbonare 1.44 g of CAO 0.001 g of CaO Carbonare 1.47 g of CAO 0.001 g of CaO Carbonare 1.48 g of Na ₂ CO ₃ (16 2) 0.001 g of CaO Carbonare 1.48 g of CAO 0.001 g of CaO Carbonare	Acetaldehyde	1,00 g of CH ₃ CHO	0,001 g of CH ₃ CHO
Ammonium 2.87 g of NH ₂ O IR 50 0.001 2 of As Arsenic 1.32 g of As ₂ O ₃ discoved in 3 ml of NaOH solution (27 %) by warming. 0.001 g of As Barium 1.03 g of Bi dissolved in 6 ml of HNO ₃ (R 19), and nitrous gases removed by boiling. 0.001 g of Bi Bromatie 1.39 g of KRO ₃ . 0.001 g of CA 0.001 g of CA Bromatie 1.49 g of KRO 0.001 g of CA 0.001 g of CA Catcum 567 g of CAC).29+0.0 Attenatively. 25.0 g of CACO ₃ disolved in 25 ml of HCI 110 %) solv 0.001 g of CC ₂ or Contonate 2.41 g of NacCO ₃ tR 301 0.001 g of CC ₂ or 0.000 g of CC ₂ or Contonate 1.47 g of KCO ₃ 0.001 g of CC ₂ or 0.000 g of CC ₂ Chorate 1.47 g of NacCO ₃ 0.001 g of CC ₂ 0.001 g of CC ₂ Chorate 1.47 g of NacCO ₃ 0.001 g of CC ₂ 0.001 g of CC ₂ Chorate 1.47 g of NacCO ₃ 0.001 g of CC ₂ 0.001 g of CC ₂ Chorate 1.47 g of NacCO ₃ 0.001 g of CC ₂ 0.001 g of CC ₂ Chorate 1.47 g of NacCO ₃ 0.001 g of CC ₂ 0.001 g of CC ₂ Chorate 1.47 g of NaCO ₃ <	Aluminium	17,60 g of KAI(SO ₄) ₂ .12H ₂ O + 10 ml H ₂ SO ₄ (25 %)	0,001 g of Al
Arasnic 1.32 g of AspCg stacked in 3 ml of NaOH solution (2% b) by varming. 0.001 g of As Barlum 1.06 g of Bi dissolved in 6 ml of NNOg (R 19); and nitrous gasss removed by bailing. 0.001 g of Br Bromate 1.49 g of KBr 0.001 g of Br 0.001 g of Br Bromate 1.49 g of KBr 0.001 g of Br 0.001 g of Br Bromate 2.49 g of NCG 0.001 g of Ca 0.001 g of Ca Bromate 2.41 g of NacCOs (R 30) 0.000 g of Ca 0.000 g of CC op Carbonate 2.41 g of NacCOs (R 30) 0.000 g of CC op 0.000 g of CC op Carbonate 1.43 g of acatom (R 2 corresponding to 5.0 g of CC), weighed into a 100 ml one mark, with the same methanol for all diutions. 0.000 g of CC op Chiorate 1.47 g of NaCI R 32 0.001 g of CC Chiorate 1.47 g of NaCI R 32 0.001 g of CC Chiorate 1.47 g of NaCI R 32 0.001 g of CC Chiorate 1.47 g of NaCI R 32 0.001 g of CC Chiorate 3.87 g of Cohoranie T Tinklydate! 0.001 g of CC Chiorate 3.87 g of Cohoranie T Tinklydate! 0.001 g of CC Chiorate 3.88 g of NaCI R	Ammonium	2,97 g of NH ₄ Cl (R 5)	0,001 g of NH ₄ or 0,000 776 6 g of N
Barium 1.78 g of BaC2 2H ₂ O R 61 0.001 g of Ba Bismuth 1.00 g of Bi dissolved in B ml HNQ ₃ (R 19), and nitrous gases removed by boiling. 0.001 g of Bi Bromate 1.34 g of KBC 0.001 g of Bi 0.001 g of Bi Calcium 3.67 g of CaC ₃ 2H ₄ O. Attenuitive, 25.0 g of CaCO ₃ dissolved in 25 ml of HC 110 %1 solution to the add CO ₂ removed by boiling. 0.001 g of Ca Carbonalt 2.41 g of Na ₂ CO ₃ (R 30) 0.001 g of Ca 0.001 g of CO Carbonalt 1.048 g of accorpany boiling. 0.001 g of CO 0.000 g of CO Carbonalt 1.048 g of accorpany boiling. 0.001 g of CO 0.001 g of CO Carbonalt 1.048 g of accorpany boiling. 0.001 g of CO 0.001 g of CO Choride 1.47 g of KCO ₃ 0.001 g of CO 0.001 g of CO Choride 1.48 g of CaCO ₃ (R 30) 0.001 g of CO 0.001 g of CO Choride 1.85 g of Mac1 (R 32) 0.001 g of CO 0.001 g of CO Choride 1.85 g of Mac1 (R 32) 0.001 g of CO 0.001 g of CO Choride 1.85 g of CoNO ₂ SH ₂ (R 50 ml CACH SH 20 ML) 0.001 g of CO Choride 1.85	Arsenic	1,32 g of As_2O_3 dissolved in 3 ml of NaOH solution (27 %) by warming.	0,001 g of As
Bismuth 1.00 g of B dissolved in 6 m of HV0_g IR 19), and nitrous gases removed by boling. 0.001 g of Br. Bromatie 1.38 g of KBr. 0.001 g of Cap. 0.001 g of Cap. Bromatie 1.38 g of Cabp.24/p.0. Atternatively, 2.50 g of CaC03 dissolved in 25 m if HC I10 %) solution of Cap. and Cap. 0.001 g of Cap. Carbonyl 1.04 g of a acotone IR 21 corresponding to 5.0 g of CaD. 0.000 g of CaD. Carbonyl 1.04 g of a acotone IR 21 corresponding to 5.0 g of CAD. 0.000 g of CAD. Carbonyl 1.04 g of a acotone IR 21 corresponding to 5.0 g of CAD. 0.000 g of CAD. Chorate 1.47 g of KCD3. 0.001 g of CAD. Chorate 1.47 g of KCD3. 0.001 g of CAD. Chorate 1.47 g of KCD3. 0.001 g of CAD. Chorate 3.97 g of Choramier 1 trihydratel 0.001 g of CAD. Chorate 3.97 g of Choramier 1 trihydratel 0.001 g of CAD. Chorate 3.93 g of CaSD.494 (KSAT ANDARD PREVIEW 0.001 g of CAD. Chorate 3.93 g of CaSD.494 (KSAT ANDARD PREVIEW 0.001 g of CAD. Chorate 3.93 g of CaSD.494 (KSAT ANDARD PREVIEW 0.001 g of FeCO. Chorate 3.93 g of ScafO (KSAT SAD.AD	Barium	1,78 g of BaCl ₂ ·2H ₂ O (R 6)	0,001 g of Ba
Bromate 1,14 g of KBr03 0,001 g of B7 Bromate 1,48 g of KBr 0,001 g of B7 Calcium 3,67 g of CaCl2_21h_0. Alternatively, 2,50 g of CaCOg desolved in 25 ml of HCI 110 %) solu- tion and Cog, removed by boling. 0,001 g of Cog 0,000 27 g of CaCl2 and Cog, removed by boling. 0,001 g of COg 0,000 27 g of CaCl2 and Cog, removed by boling. 0,001 g of COg 0,000 27 g of CaCl2 and Cog, removed by boling. 0,001 g of COg 0,000 27 g of C Carboryl 10,43 g of actoro (H 2) corresponding to 5,0 g of CO, weighed into a 100 ml on emark volumetric flak containing B0 ml of carbonyl-free methanol (HS 4.2.11), dilute to the mark wolumetric flak containing B0 ml of carbonyl-free methanol (HS 4.2.11), dilute to the mark volumetric flak containing B0 ml of carbonyl-free methanol (HS 4.2.11), dilute to the mark wolumetric flak containing B0 ml of carbonyl-free methanol (HS 4.2.11), dilute to the mark wolumetric flak containing B0 ml of carbonyl-free thooring Chorate 1.87 g of NaCl (A 20 g of CACO_g H2/0 0,001 g of CO 0,001 g of CCO 0,001 g of CLO 0,001 g of LCD 0,001 g of ACCO 0,001 g of NaCl Cobalt 0,001 g of CLO 0,001 g of CLO 0,001 g of NaCl 0,001 g of NaCl 0,001 g of SFg 1,000 1,000 g of MCHO 0,001 g of MCHO 0,001 g of MSC 0,001	Bismuth	1,00 g of Bi dissolved in 6 ml of HNO ₃ (R 19), and nitrous gases removed by boiling.	0,001 g of Bi
Bromice 1.49 g of KBr 0.001 g of Br Calcium 3.67 g of Cab(2-3P).O. Atternatively, 2,50 g of CaC03 disordved in 25 ml of HCI (10 %L solution and C02 ferroved by boling 0.001 g of Ca Cattonate 2.41 g of NagCO3 (R 30) 0.001 g of Ca Cattonate 1.04.32 g of acatone (H 2) corresponding to 5.0 g of CO, weighed into a 100 ml one mark woll metric flack containing 50 ml of catronyl-Free metrianol (RS 4.2.11), diuted to the mark woll bare to be mark woll moter for an undintext to the mark woll of the solution and diute to the mark woll bare to be mark woll metric flack containing 50 ml of catronyl-Free metrianol (RS 4.2.11), diuted to the mark woll bare to be mark woll or all diuthots. 0.001 g of CO Chiorale 1.47 g of KClO3 0.001 g of a cattroe chiorane containing of a diuthots. 0.001 g of a cattroe chiorane containing of a diuthots. Chiorale 3.87 g of Chioranine T (trihydrate) 0.001 g of a cattroe chiorane containing of containine containing of the mark woll containine containi	Bromate	1,31 g of KBrO ₃	0,001 g of BrO ₃
Calcium Soft g of coupling of pathod with the soft of the coup obsidered in 25 m of the Ch10 % soft of coupling of Couplin	Bromide	1,49 g of KBr	0,001 g of Br
Carbonate 2,41 g of NagCo3 (H 30) 0.001 g of CC3 or 0.002 27 g of C. Carbonyl 10,43 g of acetore (H 2) corresponding to 5,0 g of C), weighed into and mome- well metit flask containing 50 mi of carbonyl-Free methanol (HS 4.2.11), allued to the mark with the time methanol and mixed thoroughly. Take 20,0 ml of this solution and dilute to 100 ml cElos game methanol for all dilutions. 0,001 g of CO Chlorate 1,47 g of K020 g 0,001 g of CI03 0,001 g of CI03 Chlorine 3,97 g of Chioramine T thrivydrate) 0,001 g of CC 0,001 g of CC Chlorine 2,38 g of CAC04 [16:32] NDARD PREVIEW 0,001 g of CC Cobalt 4,34 g of CAN02 [46:40] 0,001 g of CC 0,001 g of CC Cobalt 4,38 g of CAN02 [46:40] 0,001 g of CC 0,001 g of CC Cobalt 4,38 g of Con02 [46:40] 0,001 g of CC 0,001 g of CC Cobalt 2,38 g of formaldehydre solution [35 [45] (ASS1-1:00S 0,001 g of FC/N06 0,001 g of FC/N06 Fromaldehydr 2,88 g of MaS2 [21:24] 10 ml of H2S03 [21:24] 0,001 g of IO3 Icad 1,39 g of K1 [45 [03 [46] (M20-anthestimulant-Kistel cedifs 70-d10(d-41) 1-ac1 5- 0,001 g of IO3 Icad 1,22 g of MS0 [41:20] 0,001 g of IO3 <td>Calcium</td> <td>3,67 g of CaCl₂-2H₂O. Alternatively, 2,50 g of CaCO₃ dissolved in 25 mi of HCI (10 %) solu- tion and CO₂ removed by boiling.</td> <td>0,001 g of Ca</td>	Calcium	3,67 g of CaCl ₂ -2H ₂ O. Alternatively, 2,50 g of CaCO ₃ dissolved in 25 mi of HCI (10 %) solu- tion and CO ₂ removed by boiling.	0,001 g of Ca
Carbonyl 10,43 g of acetone (R 2) corresponding to 5,0 g of CO, weighed into a 100 mine-mark with the same methanol and mixed thoroughly. Take 20,0 ml of this solution and dilute to 1000 ml. Use the same methanol (R 34, 21), diluted to the mark of 100 ml. Use the same methanol (R 34, 21), diluted to the mark of 100 ml. Use the same methanol for all dilutions. 0,001 g of CO ₃ Chiorate 1,47 g of KCO ₃ 0,001 g of CO ₃ 0,001 g of CO ₃ Chiorate 1,47 g of KCO ₃ 0,001 g of CO ₃ 0,001 g of CO ₃ Chiorate 3,97 g of Chioramine T (trihydrate) 0,001 g of C 0,001 g of C Cobat 4,94 g of Co(No ₃), 64 ₂ O 0,001 g of C 0,001 g of C Cobat 4,94 g of Co(No ₃), 64 ₂ O 0,001 g of C 0,001 g of C Cobat 4,94 g of Co(No ₃), 64 ₂ O 0,001 g of C 0,001 g of C Cobat 4,94 g of Co(No ₃), 64 ₂ O 0,001 g of C 0,001 g of C Cobat 2,28 g of Isog af (Q 0) 0,613 g of C 0,001 g of C Fluoride 2,21 g of Na 0,613 g of C 0,001 g of FeiCNI ₆ Hexacyanoferratelli 1.99 g of Klafec(Na), 24,21 (24,24 - 10 ml of H ₂ S0,42 S %) solution 0,001 g of FeiCNI ₆ Hexacfuorositicate 3,38 g of H ₂ Si (M 30,2 H ₂)<	Carbonate	2,41 g of Na ₂ CO ₃ (R 30)	0,001 g of CO ₂ or 0,000 27 g of C
Chlorate 1.47 g of KCl03 0.001 g of Cl03 Chloride 1.65 g of NaCl (R 32) 0.001 g of Cl Chlorine 3.97 g of Chloramine T (trihydrate) 0.001 g of Cl Chromium 2.83 g of KCoO1 (R 43) ANDARD PREVIEW 0.001 g of Cr Cobait 4.94 g of CuN042-6H20 0.001 g of Cr Cobait 4.94 g of CuN042-6H20 0.001 g of Cr Formaldehyde 2.85 g of formaldehyde solution (35 %) - 6353-1-1005 0.001 g of FC Formaldehyde 2.86 g of formaldehyde solution (35 %) - 6353-1-1005 0.001 g of FC Hexacyanoferrate(III) 1.99 g of KJafta(KN)8/3-H20-tathopstant/antc/stst/ccd/s370-d210-db13-gc15 0.001 g of SiF Hord 2.83 g of HysFif (30 %)-bottion/231/4/sc bio-6353-1-1005 0.001 g of SiF 0.001 g of SiF Iron 8.63 g of NH2 (K25) 0.001 g of SiF 0.001 g of SiF 0.001 g of SiF Iodate 1.22 g of Kl03 0.001 g of FC 0.001 g of SiF 0.001 g of N3 Iodate 1.42 g of Kl32 0.101 HN03 (R 19) 0.001 g of M3 0.001 g of M3 Iodate 1.62 g of Hg(N04) z + 10 m id HN03 (R 19) 0.001 g of N03 0.001 g of N03	Carbonyl	10,43 g of acetone (R 2) corresponding to 5,0 g of CO, weighed into a 100 ml one-mark volumetric flask containing 50 ml of carbonyl-free methanol (RS 4.2.11), diluted to the mark with the same methanol and mixed thoroughly. Take 20,0 ml of this solution and dilute to 1 000 ml. Use the same methanol for all dilutions.	0,001 g of CO
Chloride 1.65 g of NaCl (R 32) 0,001 g of Cl Chlorine 3.97 g of Chloramine T (trihydrate) 0,001 g of active chlorine 0,001 g of active chlorine Chromium 2.83 g of K2600 (R 23) ANDARD PREVIEW 0,001 g of Cr Cobalt 4.94 g of ColN042-6H20 0,001 g of Cr Cobalt 4.94 g of ColN042-6H20 0,001 g of Ca Copper 3.93 g of LS204-5H20 (R 24) ANDARD PREVIEW 0,001 g of Ca Fluoride 2.81 g of NaF 0,001 g of F Formaldehyde 2.86 g of formaldehyde solution (35 %) AS3-11005 0,001 g of HCHO Hexacyanoferrate(III) 1.99 g of KalFat(CN)el 3.420 - tatlop standards/sst codh5a/70-d210-db13-agcl 5. 0,001 g of Fe Iodate 1.22 g of Kl03 1.20 g of Kl (R 25) 0,001 g of IG Iron 8.63 g of MN26/12.212 + 20 + 10 ml of H204 (25 %) solution 0,001 g of M2 Iodate 1.31 g of Kl (R 25) 0,001 g of M3 0,001 g of M3 Iodate 1.32 g of Kl920/14.20 0,001 g of M3 0,001 g of M3 Magnasimu 1.01 4 g of M320,41420 0,001 g of M3 0,001 g of M3 Magnasimu 1.04 g of M1402 (R 19) <	Chlorate	1,47 g of KClO ₃	0,001 g of CIO ₃
Chlorine 3.97 g of Chloramine T (trihydrate) 0.001 g of active chlorine Chromium 2.83 g of Scoper (# 231 ANDARD PREVIEW) 0.001 g of Cor Cobalt 4.94 g of CollOg/g dHy0 0.001 g of Cor Cobalt 4.94 g of CollOg/g dHy0 0.001 g of Cor Copper 3.93 g of CuSo, 5Hy0 (8 9and ards, iteh, ai) 0.001 g of F Fluoride 2.21 g of NaF 0.001 g of F Formaldehyde 2.86 g of formaldehyde solution(145 %b), ncts1-1005 0.001 g of F Hexaciyanoferate(II) 1.99 got, K4fed(Nbl3.4120-mbodstandamk/ststcodh537-1210-4b13-ac15 0.001 g of Fe Iodate 1.22 g of Kl30 8.63 g of IMAFe(SO42) 214/0 + 10 ml of Hy264 (25 %b) solution 0.001 g of Fe Iodate 1.32 g of Kl30 g My804008(223) 1.562-163.53-1-1095 0.001 g of Fe 0.001 g of Fe Iodate 1.32 g of Kl30 g My804008(203) 1.564 (25 %b) solution 0.001 g of B 0.001 g of Po Iodate 1.32 g of Kl30 g My80401008 (271) 1.564 (25 %b) solution 0.001 g of B 0.001 g of Po Magnaese 3.08 g of MnS04 H2O 0.001 g of B 0.001 g of Mg 0.001 g of Mg Magnaesium 1.148 g of NNA02 0.001 g	Chloride	1,65 g of NaCl (R 32)	0,001 g of Cl
Chromium 2.83 g of Kicoog (# 23) CANDARD PREVIEW 0.001 g of Cr Cobalt 4.94 g of ColNoJ2 eHz0 0.001 g of Cr 0.001 g of Cr Copper 3.93 of CuS0A2 eHz0 0.001 g of Cr 0.001 g of Cr Fluoride 2.21 g of NaF 0.001 g of F 0.001 g of F Formaldehyde 2.86 g of formaldehyde solution(145 %b) cn353-110905 0.001 g of F 0.001 g of F Hexacyanoferrate(II) 1.99 goff MafFet(Nibla Hz0-anthostandamksisticedbs/79-d/210-4b13-ac15- 0.001 g of Fe 0.001 g of Fe Iodate 1.32 g of KI03 0.001 g of F 0.001 g of Fe 0.001 g of Fe Iodate 1.22 g of KI03 0.001 g of F 0.001 g of Fe 0.001 g of IO3 Iodate 1.32 g of KI03 0.001 g of Fe 0.001 g of Fe 0.001 g of Mg Iodate 1.32 g of KI03 0.001 g of Mg 0.001 g of Mg 0.001 g of Mg Magnesium 10.14 g of MgS0a, 7H20 0.001 g of Mg 0.001 g of Mg Marganesium 10.14 g of MisOa, 7H20 0.001 g of Ni 0.001 g of Ni Nitrate 1.37 g of NaNO2 0.001 g of Ni 0.001	Chlorine	3,97 g of Chloramine T (trihydrate)	0,001 g of active chlorine
Cobait 4.94 g of CC(NO ₃ /2,6H ₂ O 0.001 g of Ca Copper 3.93 g of CuSO ₄ -5H ₂ O(B by and ards.iteh.ai) 0.001 g of Ca Fluoride 2.21 g of Na ⁻ 0.001 g of F Formadehyde 2.86 g of formaldehyde solution (95 %b) CAS3-1-1005 0.001 g of FE Hexacyanoferrate(III) 1.99 g of Ka[Fet(CN)6]-3.HaO camboxistantards/sist/coch5a70-4210-4b13-ac[5- 0.001 g of FE Iron 8.63 g of NJAfet(SO ₄)-212/2 h 10 mi of H ₂ SO ₄ (25 %b) solution 0.001 g of FE Iodate 1.22 g of KlO ₃ 0.001 g of FE Iodate 1.22 g of KlO ₃ 0.001 g of Pb Magnesium 10.14 g of MgSO ₄ : H2/O 0.001 g of H2 Magnesium 10.14 g of MgSO ₄ : H2/O 0.001 g of H3 Molybdenum 1.84 g of NISO ₄ : H2/O 0.001 g of MA Nitckel 4.48 g of NISO ₄ : H2/O 0.001 g of N0 Nitrogen 6.07 g of NaNO2 0.001 g of NA Nitrogen 1.67 g of NaNO2 0.001 g of NA Nitrogen 6.07 g of NaNO2 0.001 g of NA Nitrogen 6.07 g of NaNO2 0.001 g of NA Silicate 1.48 g of Kl ₂	Chromium	2,83 g of K ₂ Cr ₂ O ₇ (R 23) ANDARD PREVEW	0,001 g of Cr
Copper 3.93 of CuSO ₄ :5H ₂ O(B 9:ADCLATCLS.ITEP.A1) 0.001 g of Cu Fluoride 2,21 g of NaF 0,001 g of F FormaldeHyde 2,86 g of formaldehyde solution (55 %), 63.51.1109S 0,001 g of HCHO HexacyanoferrateIIII 1.99 g of KalFe(CN)61.3 H2O-cantoustandards/sist/ccdb5a70_d210_4b13_act[5. 0,001 g of SF6 Iron 8.63 g of NH ₄ Fe(SO ₄) ₂ :12H ₂ O + 10 ml of H2SO ₄ (25 %) solution 0,001 g of IO Iodate 1.22 g of KlO 0,001 g of IO Iodate 1.31 g of Kl (R 25) 0,001 g of IO Lead 1.60 g of PD(NO ₃) ₂ + 1 m of HNO ₃ (R 19) 0,001 g of M2 Magnesium 10,14 g of MgSO ₄ :7H ₂ O 0,001 g of NO Marganese 3,08 g of MSO ₄ :H40O 0,001 g of NO Nickel 4.48 g of NISO ₄ :H2O 0,001 g of NO Nitrate 1,50 g of NaNO ₂ 0,001 g of NO Nitrate 1,50 g of NaNO ₂ 0,001 g of NO Nitrate 1,43 g of CH ₂ O ₄ /2H ₂ O (R 20) 0,001 g of NO Nitrate 1,43 g of CH ₂ O ₄ /2H ₂ O (R 20) 0,001 g of NO Nitrate 1,43 g of CH ₂ O ₄ /2H ₂ O (R 20) 0,001 g of SO <tr< td=""><td>Cobalt</td><td>4,94 g of Co(NO₃)₂.6H₂O</td><td>0,001 g of Co</td></tr<>	Cobalt	4,94 g of Co(NO ₃) ₂ .6H ₂ O	0,001 g of Co
Fluoride 2.21 g of NaF 0.001 g of F Formaldehyde 2.86 g of formaldehyde solution (Q5 %k) 0.6153-1:1005 0.001 g of FeICN)6 HexacyanoferatellII 1.99 got K.4/ERGNIeh3.H20.ata hostandards/sist/codh5a79-d210-4b13-ac15 0.001 g of SiFg Iron 8.63 g of MHgFe(S0a)2:12H2O + 10 ml of H2S04 (25 %) solution 0.001 g of Fe Iodate 1.22 g of KIO3 0.001 g of I Lead 1.60 g of Pb(N03/2 + 1 ml of HNO3 (R 19) 0.001 g of Mg Magnesium 10.14 g of MS04, H2O 0.001 g of Mg Magnesium 10.14 g of MS04, H2O 0.001 g of MG Marganese 3.08 g of MIS04, H2O 0.001 g of MG Marganese 3.08 g of MIS04, H2O 0.001 g of NO2 Nickel 4.48 g of NIS04, 6H2O or 4.78 g of NIS04, 7H2O 0.001 g of NO2 Nickel 1.37 g of NaNO2 0.001 g of NO2 Nitrate 1.37 g of NaNO3 0.001 g of NO2 Nitrogen 6.07 g of NaNO3 0.001 g of SO2 Nitrogen 6.07 g of NaNO3 0.001 g of SO2 Nitrote 1.43 g of KH2PO4 0.001 g of SO2 Phosphate 1.43 g of KH2PO4	Copper	3,93g of CuSO ₄ .5H ₂ O (B9)andards.iteh.al)	0,001 g of Cu
Formaldehyde 2,86 g of formaldehyde solution (45 %b) 6353-1-1095 0,001 g of HCH0 Hexacyanoferrate(III) 1,99 g of K4[F8[CN]e]a H2Q-catalog/standards/starCdn53/79-4210-4b13-ac15- 0,001 g of Fe(CN)e]a Hexafluorosilicate 3,38 g of H2GINe]a H2Q-catalog/standards/starCdn53/79-4210-4b13-ac15- 0,001 g of Fe Iodate 1,22 g of Kl0g 0,001 g of H2GN 0,001 g of IO3 Iodate 1,31 g of Kl (R 25) 0,001 g of I 0,001 g of IO3 Lead 1,60 g of PbINogly + 1 ml of HNO3 (R 19) 0,001 g of M9 Magnesium 10,14 g of MgSO4,7H2O 0,001 g of M9 Manganese 3,08 g of MISO4 H2O 0,001 g of M9 Molyddenum 1,84 g of (NB0407024,4H2O 0,001 g of N0 Nickel 4,48 g of NISO4 6H2O or 4,78 g of NISO4-7H2O 0,001 g of N0 Nitrate 1,37 g of NaNO3 0,001 g of N0 Nitrate 1,37 g of NaNO3 0,001 g of N0 Nitrogen 6,07 g of NaNO3 0,001 g of N0 Nitrogen 6,07 g of NaNO3 0,001 g of N0 Nitrogen 1,43 g of C4H2O xH2O (R 20) 0,001 g of N0 Nitrogen 0,001 g of NA 0	Fluoride	2,21 g of NaF	0,001 g of F
Hexacyanoferrate(III) 1.99.g.pf. K4_EFe(CN)6/3.H2Q-atalog/standard/s/std/codh5a79-d210-4h13-ac15- 0.001 g of SF6 Hexafluorosilicate 3.88 g of H2SF6 (30 %).pobulo(m2.231/std-iso-6535-1-1995 0.001 g of Fe Iodate 1.22 g of KI03 0.001 g of Fe Iodate 1.22 g of KI03 0.001 g of Po Iodate 1.22 g of KI03 0.001 g of Po Iodate 1.60 g of Pb(No3/2 + 1 ml of HNO3 (R 19) 0.001 g of Mg Magnesium 10.14 g of MgSO ₄ /H2O 0.001 g of Mg Magnese 3.08 g of NNSO ₄ -H2O 0.001 g of MG Molybdenum 1.84 g of (NH ₄)6/MOrO ₂₄ -H12O 0.001 g of NNO Nickel 4.48 g of NSO ₄ -6H2O or 4.78 g of NISO ₄ -7H2O 0.001 g of NO Nitrate 1.37 g of NaNO3 0.001 g of NO 0.001 g of NO Nitrate 1.43 g of C2H2O ₄ -2H2O (R 20) 0.001 g of NO 0.001 g of NO Nitrate 1.43 g of KH2POA 0.001 g of NO 0.001 g of NO Nitrate 1.43 g of C2H2O ₄ -2H2O (R 20) 0.001 g of NO 0.001 g of NO Nitrate 1.43 g of C4H2O (R 20) 0.001 g of SO 0.001 g of SO <t< td=""><td>Formaldehyde</td><td>2,86 g of formaldehyde solution (35, %) 6353-1:1995</td><td>0,001 g of HCHO</td></t<>	Formaldehyde	2,86 g of formaldehyde solution (35, %) 6353-1:1995	0,001 g of HCHO
Hexafluorosilicate 3,38 g of H ₂ SiF ₆ (30 %),solution(2)21/sit_iso_6353-1-1995 0,001 g of SiF ₆ Iron 8,63 g of NH ₄ Fet(SQ ₄):1H ₂ O + 10 ml of H ₂ SO ₄ (25 %) solution 0,001 g of IO ₃ Iodate 1,22 g of KlO ₃ 0,001 g of IO ₃ 0,001 g of IO ₃ Iodide 1,31 g of Kl (R 25) 0,001 g of Pb 0,001 g of Mg Magnesium 10,14 g of MgSO ₄ .7H ₂ O 0,001 g of Mg 0,001 g of Mg Magnese 3,08 g of MnSO ₄ .H ₂ O 0,001 g of Mg 0,001 g of Mg Molybdenum 1,62 g of Hg(NO ₃) ₂ + 1 ml of HNO ₃ (R 19) 0,001 g of Mg 0,001 g of Na Nickel 4,48 g of NiSO ₄ .H ₂ O 0,001 g of Na 0,001 g of Na Nickel 1,37 g of NaNO ₃ 0,001 g of NO ₃ 0,001 g of Na Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₂ 0,001 g of Na Nitrogen 6,07 g of NaNO ₃ 0,001 g of Na 0,001 g of SO Nitrogen 1,43 g of KH ₂ PO ₄ 0,001 g of Na 0,001 g of SO Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of SO 0,001 g of SO Silicate 1,00 g of silicic acid heated at 900 °C a	Hexacyanoferrate(II)	1,99 g of K4 Fe(CN) 3:3:H29 catalog/standards/sist/ccdb5a79-d210-4b13-ac15-	0,001 g of Fe(CN) ₆
Iron 8,63 g of NH ₄ Fe(SO ₄ /2:12H ₂ O + 10 ml of H ₂ SO ₄ (25 %) solution 0,001 g of Fe lodate 1,22 g of KIO ₃ 0,001 g of IO ₃ lodide 1,31 g of KI (R 25) 0,001 g of IO Lead 1,60 g of Pb(NO ₃) ₂ + 1 ml of HNO ₃ (R 19) 0,001 g of Mg Magnesium 10,14 g of MgSO ₄ /H ₂ O 0,001 g of Mg Magnese 3,08 g of MnSO ₄ H ₂ O 0,001 g of Mg Molybdenum 1,82 g of (NH ₄) ₆ (Mo ₇ O ₂₄ 4H ₂ O 0,001 g of Mg Nickel 4,48 g of NiSO ₄ H ₂ O or 4,78 g of NiSO ₄ -7H ₂ O 0,001 g of Ni Nitrate 1,37 g of NaNO ₃ 0,001 g of Ni 0,001 g of Ni Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₂ 0,001 g of NO ₂ Nitrate 1,37 g of NaNO ₃ 0,001 g of C ₂ O ₄ 0,001 g of C ₂ O ₄ Nitrate 1,43 g of C ₂ H ₂ O ₄ -2H ₂ O (R 20) 0,001 g of C ₂ O ₄ 0,001 g of C ₂ O ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of SiO ₂ 0,001 g of SiO ₂ Silcate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1.58 g of AgNO ₃ (Hexafluorosilicate	3,38 g of H ₂ SiF ₆ (30 %) solution 82231/sist-iso-6353-1-1995	0,001 g of SiF ₆
Iddate 1,22 g of KlO3 0,001 g of IO3 Iodide 1,31 g of Kl (R 25) 0,001 g of I Lead 1,60 g of Pb(NO3)2 + 1 ml of HNO3 (R 19) 0,001 g of Mg Magnesium 10,14 g of MgSO4;7H2O 0,001 g of Mg Manganese 3,06 g of MnSO4;H2O 0,001 g of Mg Mercury 1,62 g of Hg(NO3)2 + 10 ml of HNO3 (R 19) 0,001 g of Mg Molybdenum 1,84 g of NiSO4;H2O 0,001 g of Mo Nickel 4,48 g of NiSO4;H2O or 4,78 g of NiSO4;7H2O 0,001 g of NO3 Nitrate 1,37 g of NANO3 0,001 g of NO3 Nitrate 1,37 g of NANO2 0,001 g of NO3 Nitrate 1,43 g of C2H2O4;2H2O (R 20) 0,001 g of NO2 Oxalate 1,43 g of KH2PO4 0,001 g of C2O4 Phosphate 1,43 g of KH2PO4 0,001 g of SIO2 Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NAOH solution (27 %) 0,001 g of SIO2 Silver 1,58 g of AgNO3 (R 28). Store the solution in a dark glass bottle. 0,001 g of SIO2 Silver 1,58 g of AgNO3 (R 28). Store the solution in a dark glass bottle. 0,001 g of SIO2	Iron	8,63 g of $NH_4Fe(SO_4)_2$.12H ₂ O + 10 ml of H ₂ SO ₄ (25 %) solution	0,001 g of Fe
Iodide 1,31 g of K1 (R 25) 0,001 g of 1 Lead 1,60 g of Pb(NO ₃) ₂ + 1 ml of HNO ₃ (R 19) 0,001 g of Pb Magnesium 10,14 g of MgSO ₄ ,7H ₂ O 0,001 g of Mg Manganese 3,08 g of MnSO ₄ +H ₂ O 0,001 g of Mg Mercury 1,62 g of Hg(NO ₃) ₂ + 10 ml of HNO ₃ (R 19) 0,001 g of Mg Molybdenum 1.84 g of (NH ₄) ₆ Mo ₇ O ₂₄ .4H ₂ O 0,001 g of No Nickel 4,48 g of NiSO ₄ .6H ₂ O or 4,78 g of NiSO ₄ .7H ₂ O 0,001 g of No Nitrate 1,37 g of NaNO ₃ 0,001 g of No 0,001 g of NO Nitrate 1,36 g of KaNO ₃ 0,001 g of NO 0,001 g of NO Nitrogen 6,07 g of NaNO ₂ 0,001 g of C ₂ O ₄ 0,001 g of NO Oxalate 1,43 g of KH ₂ PO ₄ 0,001 g of C ₂ O ₄ 0,001 g of NO Oxalate 1,43 g of KH ₂ PO ₄ 0,001 g of C ₂ O ₄ 0,001 g of NO Oxalate 1,43 g of KH ₂ PO ₄ 0,001 g of SiO ₂ 0,001 g of SiO ₂ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of SiO ₂ 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass	lodate	1,22 g of KIO ₃	0,001 g of IO ₃
Lead 1,60 g of Pb(NO ₃) ₂ + 1 ml of HNO ₃ (R 19) 0,001 g of Pb Magnesium 10,14 g of MgSO ₄ ,7H ₂ O 0,001 g of Mg Manganese 3,08 g of MnSO ₄ ,H ₂ O 0,001 g of Mn Mercury 1,62 g of Hg(NO ₃) ₂ + 10 ml of HNO ₃ (R 19) 0,001 g of Mg Molybdenum 1,84 g of (NH ₄) ₆ Mo ₇ O ₂₄ ,4H ₂ O 0,001 g of No Nickel 4,48 g of NiSO ₄ ,6H ₂ O or 4,78 g of NiSO ₄ ,7H ₂ O 0,001 g of NO Nitrate 1,37 g of NaNO ₃ 0,001 g of NO Nitrate 1,35 g of NaNO ₂ 0,001 g of NO Nitrite 1,50 g of NaNO ₂ 0,001 g of PO Nitrogen 6,07 g of NaNO ₃ 0,001 g of C ₂ O ₄ Oxalate 1,43 g of KH ₂ PO ₄ 0,001 g of PO Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO Phosphorus 2,59 g of KNO ₃ 0,001 g of SO Silicate 1,00 g of Silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SO Siliver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of SO Silver 1,81 g of K ₂ SO ₄ 0,001 g of SO 5 </td <td>lodide</td> <td>1,31 g of KI (R 25)</td> <td>0,001 g of I</td>	lodide	1,31 g of KI (R 25)	0,001 g of I
Magnesium 10,14 g of MgSO ₄ ·H ₂ O 0,001 g of Mg Manganese 3,08 g of MnSO ₄ ·H ₂ O 0,001 g of Mn Mercury 1,62 g of Hg(NO ₃) ₂ + 10 ml of HNO ₃ (R 19) 0,001 g of Mg Molybdenum 1,84 g of (NH ₄) ₆ Mo ₇ O ₂₄ ·H ₂ O 0,001 g of Mo Nickel 4,48 g of NiSO ₄ ·H ₂ O ar 4,78 g of NiSO ₄ ·TH ₂ O 0,001 g of No Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₃ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO Nitrogen 6,07 g of NaNO ₂ 0,001 g of C ₂ O ₄ Phosphate 1,43 g of CH ₂ PO ₄ 0,001 g of C ₂ O ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of SiO ₂ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of SiO ₂ Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of SiO ₂ Silver 1,81 g of K ₂ SO ₄ 0,001 g of S 0,001 g of SiO ₂ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S 0,001 g of S Sulphur 5,44 g of K	Lead	1,60 g of Pb(NO ₃) ₂ + 1 ml of HNO ₃ (R 19)	0,001 g of Pb
Manganese 3,08 g of MnSO ₄ .H ₂ O 0,001 g of Mn Mercury 1,62 g of Hg(NO ₃) ₂ + 10 ml of HNO ₃ (R 19) 0,001 g of Hg Molybdenum 1,84 g of (NH4) ₆ Mo ₇ O ₂₄ .H ₂ O 0,001 g of Mo Nickel 4,84 g of NiSO ₄ .H ₂ O or 4,78 g of NiSO ₄ .7H ₂ O 0,001 g of Ni Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₃ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO ₂ Nitrogen 6,07 g of NaNO ₃ 0,001 g of C ₂ O ₄ Phosphate 1,43 g of C ₂ H ₂ O ₄ .2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of FO ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of SiO ₂ 0,001 g of SiO ₂ Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of SO ₄ 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S 0,001 g of S Sulphute 7,49 g f Na ₂ SO ₃ SH ₂ O (R 36) 0,001 g of S	Magnesium	10,14 g of MgSO ₄ ·7H ₂ O	0,001 g of Mg
Mercury 1,62 g of Hg(NO ₃) ₂ + 10 ml of HNO ₃ (R 19) 0,001 g of Hg Molybdenum 1,84 g of (NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O 0,001 g of Mo Nickel 4,48 g of NiSO ₄ .6H ₂ O or 4,78 g of NiSO ₄ .7H ₂ O 0,001 g of No Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₂ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO Nitrite 1,50 g of NaNO ₃ 0,001 g of NO Nitrogen 6,07 g of NaNO ₃ 0,001 g of C ₂ O ₄ Oxalate 1,43 g of C ₂ H ₂ O ₄ ·2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of R Potassium 2,59 g of KNO ₃ 0,001 g of SiO ₂ Silcate 1,00 g of silicacia heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Na Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of SO ₄ Sulphide 7,49 g of Na ₂ S-9H ₂ O 0,001 g of SCN Sulphide 7,49 g of Na ₂ S-9A ₂ O ₃ -5H ₂ O (R 36) 0,001 g of SCN </td <td>Manganese</td> <td>3,08 g of MnSO₄⋅H₂O</td> <td>0,001 g of Mn</td>	Manganese	3,08 g of MnSO ₄ ⋅H ₂ O	0,001 g of Mn
Molybdenum 1,84 g of (NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O 0,001 g of Mo Nickel 4,48 g of NiSO ₄ ·6H ₂ O or 4,78 g of NiSO ₄ ·7H ₂ O 0,001 g of Ni Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₃ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO ₂ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO ₂ Nitrogen 6,07 g of NaNO ₃ 0,001 g of N Oxalate 1,43 g of C ₂ H ₂ O ₄ ·2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,38 g of KH ₂ PO ₄ 0,001 g of FO Potassium 2,59 g of KNO ₃ 0,001 g of SiO ₂ Silicate 1,00 g of silici acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Siliver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of So Soluphate 1,81 g of K ₂ SO ₄ 0,001 g of S 0,001 g of SO Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of SCN 0,001 g of SCN Thiocyanate 1,31 g of	Mercury	$1,62 \text{ g of Hg}(NO_3)_2 + 10 \text{ ml of HNO}_3 (R 19)$	0,001 g of Hg
Nickel 448 g of NiSO ₄ 6H ₂ O or 4,78 g of NiSO ₄ -7H ₂ O 0,001 g of Ni Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₃ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO ₂ Nitrogen 6,07 g of NaNO ₃ 0,001 g of NO Oxalate 1,43 g of C ₂ H ₂ O ₄ -2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of F Potassium 2,59 g of KNO ₃ 0,001 g of SiO ₂ Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of SCN Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ -SH ₂ O (R 36) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ -7H ₂ O 0,001 g of Ti	Molybdenum	1,84 g of (NH ₄) ₆ Mo ₇ O ₂₄ .4H ₂ O	0,001 g of Mo
Nitrate 1,37 g of NaNO ₃ 0,001 g of NO ₃ Nitrite 1,50 g of NaNO ₂ 0,001 g of NO ₂ Nitrogen 6,07 g of NaNO ₃ 0,001 g of N Oxalate 1,43 g of C ₂ H ₂ O ₄ .2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of R Phosphorus 2,59 g of KNO ₃ 0,001 g of SiO ₂ Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of SiO ₂ Sodium 2,54 g of NaC1 (R 32) 0,001 g of S Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphide 7,49 g of Na ₂ S·9H ₂ O 0,001 g of S Sulphide 7,49 g of Na ₂ S·9H ₂ O 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of S ₂ O ₃ Thiosulphate 2,21 g of Na ₂ S·9 ₃ -5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti </td <td>Nickel</td> <td>4,48 g of NiSO₄.6H₂O or 4,78 g of NiSO₄.7H₂O</td> <td>0,001 g of Ni</td>	Nickel	4,48 g of NiSO ₄ .6H ₂ O or 4,78 g of NiSO ₄ .7H ₂ O	0,001 g of Ni
Nitrite 1,50 g of NaNO2 0,001 g of NO2 Nitrogen 6,07 g of NaNO3 0,001 g of N Oxalate 1,43 g of C2H2Q4:2H2O (R 20) 0,001 g of C2Q4 Phosphate 1,43 g of KH2PO4 0,001 g of PO4 Phosphorus 4,39 g of KH2PO4 0,001 g of P Potassium 2,59 g of KNO3 0,001 g of A Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of Ag Silver 1,58 g of AgNO3 (R 28). Store the solution in a dark glass bottle. 0,001 g of SiO2 Sodium 2,54 g of NaCl (R 32) 0,001 g of SO4 Sulphate 1,81 g of K2SO4 0,001 g of SO4 Sulphate 1,81 g of K2SO4 0,001 g of S Sulphur 5,44 g of K2SO4 0,001 g of SCN Thiocyanate 1,31 g of N4SCN 0,001 g of SCN Thiosulphate 2,147 g of TiCl3 solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO4,7H2O 0,001 g of Zn 0,001 g of Zn	Nitrate	1,37 g of NaNO ₃	0,001 g of NO ₃
Nitrogen 6,07 g of NaNO ₃ 0,001 g of N Oxalate 1,43 g of C ₂ H ₂ O ₄ :2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of P Potassium 2,59 g of KNO ₃ 0,001 g of SiO Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·SH ₂ O (R 36) 0,001 g of Ti Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti	Nitrite	1,50 g of NaNO ₂	0,001 g of NO ₂
Oxalate 1,43 g of C ₂ H ₂ O ₄ ·2H ₂ O (R 20) 0,001 g of C ₂ O ₄ Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of P Potassium 2,59 g of KNO ₃ 0,001 g of K Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of SO Sulphate 1,31 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of SCN Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of Ti Zitranium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti	Nitrogen	6,07 g of NaNO ₃	0,001 g of N
Phosphate 1,43 g of KH ₂ PO ₄ 0,001 g of PO ₄ Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of P Potassium 2,59 g of KNO ₃ 0,001 g of K Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of SCN Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of S ₂ O ₃ Thiosulphate 2,147 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ .7H ₂ O 0,001 g of ZnSO	Oxalate	1,43 g of C ₂ H ₂ O ₄ ·2H ₂ O (R 20)	0,001 g of C ₂ O ₄
Phosphorus 4,39 g of KH ₂ PO ₄ 0,001 g of P Potassium 2,59 g of KNO ₃ 0,001 g of K Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphide 7,49 g of Na ₂ S·9H ₂ O 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of SCN Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of S ₂ O ₃ Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of Ti Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti	Phosphate	1,43 g of KH ₂ PO ₄	0,001 g of PO ₄
Potassium 2,59 g of KNO ₃ 0,001 g of K Silicate 1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %) 0,001 g of SiO ₂ Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of SO ₄ Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of S Sulphide 7,49 g of Na ₂ S.9H ₂ O 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of S ₂ O ₃ Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of Ti Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Phosphorus	4,39 g of KH ₂ PO ₄	0,001 g of P
Silicate $1,00 ext{ g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %)} 0,001 ext{ g of SiO}_2 Silver 1,58 ext{ g of AgNO}_3 (R 28). Store the solution in a dark glass bottle. 0,001 ext{ g of Ag} Sodium 2,54 ext{ g of NaCl (R 32)} 0,001 ext{ g of Na} 0,001 ext{ g of SO}_4 Sulphate 1,81 ext{ g of K}_2SO_4 0,001 ext{ g of SO}_4 0,001 ext{ g of SO}_4 Sulphur 5,44 ext{ g of K}_2SO_4 0,001 ext{ g of S} 0,001 ext{ g of S} Sulphur 5,44 ext{ g of K}_2SO_4 0,001 ext{ g of S} 0,001 ext{ g of S} Thiocyanate 1,31 ext{ g of Na}_2S_2O_3.5H_2O (R 36) 0,001 ext{ g of S}_2O_3 0,001 ext{ g of S}_2O_3 Titanium 21,47 ext{ g of TiCl}_3 ext{ solution (15 \%) + 20 ext{ ml of HCl solution (25 \%)} 0,001 ext{ g of Ti} Zinc 4,40 ext{ g of ZnSO}_4.7H_2O 0,001 ext{ g of ZnSO}_4.7H_2O 0,001 ext{ g of ZnSO}_4.7H_2O $	Potassium	2,59 g of KNO3	0,001 g of K
Silver 1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle. 0,001 g of Ag Sodium 2,54 g of NaCl (R 32) 0,001 g of Na Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of SO ₄ Sulphide 7,49 g of Na ₂ S.9H ₂ O 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ .5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ .7H ₂ O 0,001 g of Zn	Silicate	1,00 g of silicic acid heated at 900 °C and dissolved in 8 ml of NaOH solution (27 %)	0,001 g of SiO ₂
Sodium 2,54 g of NaCl (R 32) 0,001 g of Na Sulphate 1,81 g of K ₂ SO ₄ 0,001 g of SO ₄ Sulphide 7,49 g of Na ₂ S·9H ₂ O 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of S ₂ O ₃ Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Silver	1,58 g of AgNO ₃ (R 28). Store the solution in a dark glass bottle.	0,001 g of Ag
Sulphate 1,81 g of K2SO4 0,001 g of SO4 Sulphide 7,49 g of Na2S.9H2O 0,001 g of S Sulphur 5,44 g of K2SO4 0,001 g of S Sulphur 5,44 g of K2SO4 0,001 g of S Thiocyanate 1,31 g of NH4SCN 0,001 g of S2O3 Thiosulphate 2,21 g of Na2S2O3.5H2O (R 36) 0,001 g of S2O3 Titanium 21,47 g of TiCl3 solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO4.7H2O 0,001 g of Zn	Sodium	2,54 g of NaCl (R 32)	0,001 g of Na
Sulphide 7,49 g of Na ₂ S.9H ₂ O 0,001 g of S Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Sulphate	1,81 g of K₂SO₄	0,001 g of SO₄
Sulphur 5,44 g of K ₂ SO ₄ 0,001 g of S Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Sulphide	7,49 g of Na ₂ S·9H ₂ O	0,001 g of S
Thiocyanate 1,31 g of NH ₄ SCN 0,001 g of SCN Thiosulphate 2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36) 0,001 g of S ₂ O ₃ Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Sulphur	$5,44 \text{ g of } \text{K}_2\text{SO}_4$	0,001 g of S
Thiosulphate 2,21 g of Na2S203·5H20 (R 36) 0,001 g of S203 Titanium 21,47 g of TiCl3 solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO4·7H20 0,001 g of Zn	Thiocyanate	1,31 g of NH₄SCN	0,001 g of SCN
Titanium 21,47 g of TiCl ₃ solution (15 %) + 20 ml of HCl solution (25 %) 0,001 g of Ti Zinc 4,40 g of ZnSO ₄ .7H ₂ O 0,001 g of Zn	Thiosulphate	2,21 g of Na ₂ S ₂ O ₃ ·5H ₂ O (R 36)	0,001 g of S ₂ O ₂
Zinc 4,40 g of ZnSO ₄ ·7H ₂ O 0,001 g of Zn	Titanium	21.47 g of TiCl ₂ solution (15 %) + 20 ml of HCl solution (25 %)	0.001 g of Ti
	Zinc	4,40 g of ZnSO ₄ .7H ₂ O	0,001 g of Zn

Table 1 – Preparations of stock standard solutions

4.2.6 Copper(II) sulphate (RS)

4.2.6.1 Preparation

Dissolve 63 g of copper(II) sulphate pentahydrate (R 9) in about 900 ml of a mixture of 25 ml of hydrochloric acid solution (R 13) and 975 ml of water and dilute to 1 000 ml with the same mixture. Determine the concentration by the method specified in 4.2.6.2 and adjust it to 62,4 mg of $CuSO_4$ ·5H₂O per millilitre using a calculated quantity of the diluted hydrochloric acid solution.

4.2.6.2 Titration

Place 10,0 ml of the solution (4.2.6.1), 50 ml of water, 12 ml of approximately 12 % acetic acid solution and 3 g of potassium iodide (R 25), in a 200 ml conical flask fitted with a ground glass stopper. Titrate the liberated iodine with standard volumetric sodium thiosulphate solution. $c(Na_2S_2O_3) = 0.1 \text{ mol/I}$, using 10 drops of the starch solutions (IS 4.3.11) towards the end of the titration.

The end-point is reached when the blue colour has just been discharged.

1 ml of sodium thiosulphate solution, $c(Na_2S_2O_3) = 0,1$ mol/l, A and dilute to 1 000 ml. corresponds to 24,97 mg of CuSO₄·5H₂O.

4.2.9 Iron(II)/iron(III) mixture (RS)

Dissolve 10 g of ammonium iron(II) sulphate hexahydrate and 1 g of ammonium iron(III) sulphate dodecahydrate in water, add 5 ml of sulphuric acid solution (20 %), and dilute to 100 ml.

4.2.10 Lead acetate (basic) (RS)

Dissove 5 g of lead(II) acetate trihydrate and 15 g of sodium hydroxide (R 34) in 80 ml of water and dilute to 100 ml.

4.2.11 Methanol, carbonyl-free (RS)

Add 10 g of 2,4-dinitrophenylhydrazine and 0,5 ml of hydrochloric acid solution (R 13) to 2 litres of methanol (R 18), reflux for 2 h and then distil, rejecting the first 50 ml of distillate. Stir the methanol during the distillation using a magnetic stirrer to avoid bumping. Stored in a tightly stoppered bottle, the methanol will remain carbonyl-free indefinitely.

4.2.12 Oxalate standard buffer (RS)

Dissolve 12,71 g of potassium tetraoxalate dihydrate in water and dilute to 1 000 ml.

(standards if Phosphate standard buffer (RS)

4.2.7 2,4-Dinitrophenylhydrazine (RS)

Dissolve 50 mg of 2,4-dinitrophenylhydrazine, in 25 ml of stand of *di*sodium hydrogen phosphate, both previously dried for 2 h carbonyl-free methanol (RS 4.2.11) and 2 ml of hydrochloric 31/st at 120 ± 10 °C in the carbon dioxide-free water (see 3.2) and acid solution (R 13), and dilute to 50 ml with water. Discard dilute to 1 000 ml with the same water.

4.2.8 Iron(III) chloride (RS)

4.2.8.1 Preparation

Dissolve 46 g of iron(III) chloride hexahydrate in about 900 ml of a mixture of 25 ml of hydrochloric acid solution (R 13) and 975 ml of water and dilute to 1 000 ml with the same mixture. Determine the concentration by the method specified in 4.2.8.2 and adjust it to 45,0 mg of $FeCl_3.6H_2O$ per millilitre using a calculated quantity of the diluted hydrochloric acid solution.

4.2.8.2 Titration

Place 10,0 ml of the solution (4.2.8.1), 15 ml of water, 5 ml of the hydrochloric acid solution (R 13) and 4 g of potassium iodide (R 25) in a 200 ml conical flask fitted with a ground glass stopper. Stopper the flask, allow to stand in the dark for 15 min and add 100 ml of water; titrate the liberated iodine with standard volumetric sodium thiosulphate solution, $c(Na_2S_2O_3) = 0,1$ mol/l, using 10 drops of the starch solution (IS 4.3.11) towards the end of the titration.

The end-point is reached when the blue colour has just been discharged.

1 ml of sodium thiosulphate solution, $c(Na_2S_2O_3) = 0,1 \text{ mol/l}$, corresponds to 27,03 mg of FeCl₃·6H₂O.

4.2.14 Phthalate standard buffer (RS)

Dissolve 10,21 g of potassium hydrogen phthalate, previously dried for 1 h at 110 $^{\circ}\text{C},$ in water and dilute to 1 000 ml.

4.2.15 Potassium hydroxide methanolic solution (RS)

Mix 15,0 ml of potassium hydroxide solution (33 %) with 50 ml of carbonyl-free methanol (RS 4.2.11). Discard after 2 weeks.

4.2.16 Sodium dihydrogen phosphate (RS)

Dissolve 20 g of sodium dihydrogen phosphate monohydrate in water, add 1 ml of sulphuric acid solution (20 %), and dilute to 100 ml.

4.2.17 Tartrate standard buffer (RS)

Prepare a saturated solution of racemic potassium hydrogen tartrate by shaking an excess vigorously with water at $25 \, ^{\circ}$ C. The solution has a limited shelf life which may be extended by adding a small crystal of thymol.

4.3 Indicator solutions

Prepare the indicator solutions as follows.

4.3.1 Ammonium iron(III) sulphate (IS)

Dissolve 33 g of ammonium iron(III) sulphate dodecahydrate in 67 ml of nitric acid solution (12 %).

4.3.2 Bromophenol blue (IS)

Warm 0,1 g of bromophenol blue with 3,0 ml of 0,2 % sodium hydroxide solution and 5 ml of 95 % (V/V) ethanol. When dissolution is complete, add 50 ml of 95 % (V/V) ethanol and dilute to 250 ml with water.

4.3.3 Crystal violet (IS)

Dissolve 1,25 g of crystal violet C.I. 42.555 in 250 ml of acetic acid (R 1).

4.3.4 Isatin (IS)

Dissolve 0,50 g of isatin in 50 ml of sulphuric acid solution (R 37) (solution A).

Dissolve 0,50 g of iron(III) chloride hexahydrate in 2 ml of water and dilute to 100 ml with sulphuric acid solution (R 37) stirring until the evolution of gas ceases (solution B).

Immediately before use, add 5,0 ml of solution B to 2,5 ml of solution A and dilute to 100 ml with sulphuric acid solution (R 37).

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4.3.5 Methyl orange (IS) https://standards.iteh.ai/catalog/standards/sist/ccdb5a79-d210-4b13-ac15-

Dissolve 0,1 g of methyl orange C.I. 13025 in 50 ml of 95 % (V/V) ethanol and dilute to 250 ml with water.

4.3.6 Methyl red (IS)

Warm 25 mg of finely powdered methyl red C.I. 13020 with 0,95 ml of 0,2 % sodium hydroxide solution and 5 ml of 95 % (V/V) ethanol. When dissolution is complete, add 125 ml of 95 % (V/V) ethanol and dilute to 250 ml with water.

4.3.7 Methylthymol blue mixture

Triturate 1 g of methylthymol blue with 100 g of potassium nitrate to a fine powder.

4.3.8 Mordant black 11 mixture

Triturate 1 g of Mordant black 11 C.I. 14645 and 100 g of sodium chloride to a fine powder.

4.3.9 Phenolphthalein (IS)

Dissolve 2,5 g of phenolphthalein in 250 ml of 95 % (V/V) ethanol.

4.3.10 Phenol red (IS)

Warm 50 mg of phenol red with 2,85 ml of 0,2 % sodium hydroxide solution and 5 ml of 95 % (V/V) ethanol. After solu-

tion is effected, add 50 ml of 95 % (V/V) ethanol and dilute to 250 ml with water.

4.3.11 Starch (IS)

Make a paste of 1,0 g of soluble starch with 5 ml of water and add the paste to 100 ml of boiling water, with stirring. Boil for a few minutes and cool. Discard the solution after 2 weeks.

NOTE — The shelf life of the solution may be extended to several months by adding a few drops of formaldehyde solution.

4.3.12 Thymolphthalein (IS)

Dissolve 0,50 g of thymolphthalein in 60 ml of 95 % (V/V) ethanol and dilute to 250 ml with water.

5 General test methods (GM)

5.1 Water-insoluble matter (GM 1)

Dissolve the specified test portion as completely as possible in a suitable volume of boiling water, cool and filter through a sintered glass filter porosity P 40 (pore size diameter 16 to 40 μ m), previously dried for 1 h at 105 ± 2 °C, cooled in a desiccator and weighed to the nearest 0,1 mg. Wash the residue with water, dry for 1 h at 105 ± 2 °C, cool in a desiccator and then reweigh to the nearest 0,1 mg. Calculate the mass of residue.

Acidify the specified volume of the test solution with 1 ml of nitric acid solution (25 %) and add 1 ml of approximately 1,7 % silver nitrate solution.

Allow to stand for 2 min. Compare the opalescence with that obtained with the specified standard matching solution.

5.3 Sulphate (GM 3)

5.2 Chloride (GM 2)

Mix 0,25 ml of 0,02 % potassium sulphate solution in 30 % (V/V) ethanol with 1 ml of 25 % barium chloride dihydrate solution (seeding solution). To this mixture add, after exactly 1 min, the specified volume of the test solution which has previously been acidified with 0,5 ml of 20 % hydrochloric acid solution.

Allow to stand for 5 min and compare the turbidity with that obtained with the specified standard matching solution.

5.4 Phosphate (GM 4)

Add 5 ml of 10 % ammonium molybdate solution to the specified volume of the test solution. Adjust the pH to 1,8 and heat the solution to boiling. Cool, add 12,5 ml of 15 % hydrochloric acid solution and extract with 20 ml of diethyl ether. Wash the organic phase with 5 % hydrochloric acid solution and reduce with 0,2 ml of 2 % tin(II) chloride dihydrate solution in hydrochloric acid solution (R 13).