

Metrohm Food Analysis



Order your package today!

All-in-one solutions for the food & beverage industry



Metrohm...

- is the global market leader in titration
- is the only company to offer a complete range of ion analysis equipment – titration, voltammetry and ion chromatography
- is a Swiss company and manufactures exclusively in Switzerland
- grants a 3-year instrument warranty and a 10-year warranty on chemical suppressors for ion chromatography
- provides you with unparalleled application expertise
- offers you more than 1300 applications free of charge
- supports you with expert service through local representatives and regional support centers
- is not listed on the stock exchange, but is owned by a foundation
- gives the interests of customers and employees priority over maximizing profit

Metrohm – your reliable partner for food analysis

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Metrohm has been a trusted partner to the food & beverage industry for more than 60 years. Major food brands from all around the world rely on our instruments and applications to safeguard the quality of their products, comply with regulations and optimize processes.

As of 1 March until 31 December 2010 we offer you selected all-in-one packages

for:

- **pH measurement**
- **titration**
- **ion chromatography**
- **oxidation stability measurement**
- **voltammetric trace analysis**

Each package comes with Metrohm's latest hard- and software. We guarantee ease of use, outstanding precision of measurements and perfect reliability of results. The packages contain everything for your staff in the laboratory to start working on the spot.

Do not miss this opportunity and benefit from higher throughput and lower maintenance costs.

pH measurement

Package 780 pH Meter «Food Lab»

04

The measurement of the pH value is one of the most frequently carried out tests in the food laboratory. Be it liquid or solid food-stuffs you need to test, the package 780 pH Meter «Food Lab» contains the appropriate electrode. Don't forget to tap into our dozens of pH-applications – for free!

These electrodes are included:

- Unitrode – for universal use from pH 0 - 14 and 0 - 100 °C
- Aquatrode plus – specialized on aqueous, weakly buffered samples like drinking water
- Porotrode – capillary diaphragm for liquid, albuminous samples like milk or yoghurt
- Needle electrode – robust design for measurement in semi-solid samples like cheese or fruits



- 1 x 780 pH Meter
- 1 x 801 Magnetic stirrer
- 1 x Unitrode with Pt 1000
- 1 x Aquatrode plus with Pt 1000
- 1 x Porotrode
- 1 x Needle Electrode
- 1 x Electrode cable 1 m
- 1 x pHit Kit for electrode maintenance
- 1 x Buffer solutions pH 4/7/9

User benefits

- GLP compliant electrode test
- Method & result memory
- Up to 9 buffers for calibration
- User and sample ID
- RS232 interface for printer & PC
- Monitoring intervals

Order number: 2.780.1010



Titration

Package Food & Beverage Compact Titrosampler «Acid/Base»

06

Titration is one of the most important methods in QC labs in the food industry. This all-in-one package for the automatic determination of potentiometric parameters is based on our award-winning 862 Compact Titrosampler. Use this opportunity and automate your routine analyses at an extremely competitive price.

- 1 x 862 Compact Titrosampler
- 1 x 802 Rod Stirrer
- 1 x 800 Dosino
- 1 x Dosing Unit 20 mL
- All accessories required for acid/base titration (pH electrode, cables, buffers, electrolytes, etc.)

User benefits

- Compact and economical titration automat
- Intelligent Dosing Unit with monitoring of the titrant
- Highest precision due to high resolution measuring interface
- Live curve
- Awarded with the 2009 IBO Silver Award for industrial design

Order number:
2.862.1010



Titration

Package Food Titrino plus «Acid/Base»

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This is Metrohm's basic solution for the most common potentiometric analyses in the food industry. The package comes with a USB stick containing 100 standard methods described in detail. The Food Titrino plus is so easy to use that even unskilled personnel can operate it within no time at all.

- 1 x 848 Titrino plus
- 1 x 801 Magnetic Stirrer
- 1 x Exchange Unit 20 mL
- All accessories required for acid/base titration (pH electrode, cables, buffers, electrolytes, etc.)

User benefits

- Intelligent Exchange Unit with monitoring of the titrant
- Highest precision due to high resolution measuring interface
- Live curve
- Very easy to use

Order number: 2.848.1010



Titration

Karl Fischer Titration

Package Karl Fischer Titrino plus complete

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The water content largely determines the quality and shelf life of many food products. As the water content of most food products is larger than 1 %, it can be easily determined by means of volumetric Karl Fischer titration. This all-in-one Karl-Fischer package gets you started in no time at all.

- 1 x 870 KF Titrino plus
- 1 x 803 Ti Stand with stirrer
- 1 x Exchange Unit 10 mL
- All accessories required for KF titration (titration vessel, electrode, cables, etc.)

User benefits

- Intelligent Exchange Unit with monitoring of the titrant
- Highest precision due to high resolution measuring interface
- Live curve
- Very easy to use

Order number: 2.870.1010



Karl Fischer Titration

Package Karl Fischer Titrino plus complete (with thermostatted titration vessel)

09

Some samples like it hot: Cocoa products, tobacco and other samples need to be titrated at higher temperatures, therefore the use of a thermostatted titration vessel is required.

- 1 x 2.870.1010 Karl Fischer Titrino plus complete
- 1 x Titration vessel with thermost. jacket 20 - 90 mL

User benefits

- Intelligent Exchange Unit with monitoring of the titrant
- Highest precision due to high resolution measuring interface
- Live curve
- Very easy to use

Order number: 2.870.1110



Ion chromatography

Package 881 Compact IC pro food

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Ion chromatography is a standard method in food analysis. Not only anions and cations but also organic acids and polar substances can be quantified in all kinds of foods and beverages.

This all-in-one package contains the 881 Compact IC pro combined with an 858 Professional Sample Processor for ion analysis including Metrohm's patented Inline Dialysis. This sample preparation technique provides for the fully automatic removal of particle- and protein-containing matrices making the system ideal for the analysis of dairy products.

- 1 x 881 Compact IC pro
- 1 x 858 Professional Sample Processor
- 1 x 800 Dosino
- 1 x Dosing Unit 2 mL
- 1 x Glass bottle 1000 mL GL 45
- 2 x M6 thread/UNF 10/32 coupling
- 1 x Dialysis Cell holder
- 1 x IC Equipment for Dialysis
- 1 x Metrosep A SUPP 5 – 100/4.0
- 1 x Metrosep A SUPP 4/5 Guard/4.0
- 2 x Thread stopper
- 1 x Sample Rack 54 x 11 mL, 1 x 300 mL
- 1 x Sample Vials 11 mL, 200 pieces
- 1 x Sample Vial Caps, 200 pieces
- 1 x MagIC Net™ 2.1 Compact Software

Order number: 2.881.1030





User benefits

- Very compact analysis system
- Simple and intuitive operation
- Comprehensive monitoring and control functions
- Complies with GLP and FDA requirements
- Patented Metrohm Inline Dialysis for matrix independent analyses
- Professional Sample Processor for any required volumes and liquid handling tasks



VA trace analysis

Package 797 VA Computrace for trace analysis

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The unique benefit of voltammetric trace analysis to the food industry lies in its outstanding accuracy and sensitivity (lower ppb range). Heavy metal ions that can be present as contaminants in food can be determined with high sensitivity. Besides, a number of organic substances in food, for example, vitamin C, vitamins of the B group or quinine, can also be determined using voltammetry.

- 1 x 797 VA Computrace for voltammetric trace analysis incl. VA Computrace software
- Multi-Mode Electrode, Ag/AgCl reference electrode and platinum auxiliary electrode
- 2 x 800 Dosino for automatic addition of auxiliary solutions
- Accessories such as bottles, tubings, etc.

User benefits

- Semi-automated system for routine analysis
- Automatic standard addition
- Automatic addition of buffer or electrolyte
- Modular, extendable system

Order number: MVA-02



Oxidation stability of fats and oils

Package 743 Rancimat for oxidation stability

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Oils and fats are subject to oxidation, which contributes to their spoilage. International standards such as AOCS Cd 12b-92 and ISO 6886 describe the Rancimat method to determine the oxidation stability of animal and vegetable fats and oils. The method can also be used to determine the oxidation stability of fat-containing food-stuffs.

Metrohm's all-in-one package is based on the proven 743 Rancimat and allows the simultaneous measurement of up to eight samples.

- 1 x 743 Rancimat incl. Rancimat software
- All accessories required to set up the Rancimat system incl. consumables

User benefits

- Compact instrument design
- 8 sample positions
- Independent start of each channel
- Highest reliability and simple operation
- Robust conductivity cell integrated in measuring vessel cover
- Control of all instrument functions from PC
- High data security by storage of all data: determination, method and instrument data



Order number: 2.743.0014 743 Rancimat (230 V)
2.743.0015 743 Rancimat (115 V)

Oxidation stability

Methods available from Metrohm for the food industry

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The following table is organized according to product areas and lists relevant parameters that can be determined using methods developed by Metrohm. Moreover, you can see which standards these methods fulfill.

If you cannot find your sample matrix or a parameter that is important for you, please contact your local Metrohm representative. We are continuously expanding our range of applications and will gladly assist you in solving your specific analytical problem.

Sample	Parameters for titration	Parameters for voltammetry	Parameters for stability measurement	Parameters for ion chromatography
Meat products, meat extracts, bouillon preparations, spices, soups, sauces	Chloride (NaCl) Kjehldahl nitrogen Sulfurous acid	Pb in fish (AOAC 972-24)		Anions: nitrite, nitrate (DIN EN 12014-4:2005), chloride, phosphate Polyphosphates Organic acids Cations: Na ⁺ , NH ₄ ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ Biogenic amines in fish Monosaccharides and disaccharides Sugar alcohols
Table salt, spices, pickling salt, herbs and aromatic salts	Chloride (NaCl) Total iodine Fluoride Tricalciumphosphate Nitrite	Iodide, iodate		Anions: sulfate, sulfite, bromide, iodide, chloride, iodate, fluoride, phosphate, molybdate Polyphosphates Organic acids Cations: Na ⁺ , K ⁺
Canned fruit, vegetables and mushrooms, dried fruit and vegetables	Oxalic acid Total sulfurous acid Acid content Salt content	Sn, other heavy metals		Anions: phosphite, nitrite, nitrate (DIN EN 12014-2:1997), chloride, phosphate, sulfate, perchlorate Organic acids Cations: K ⁺ , Mg ²⁺ Monosaccharides and disaccharides
Sweeteners, gelling and thickening agents	Methoxy and ethoxy groups Cyclamate Saccharin			Anions: fluoride, chloride, bromide, nitrate, phosphate, sulfate Organic acids Cations: Na ⁺ , K ⁺ , NH ₄ ⁺ , Ca ²⁺ , Mg ²⁺ , Fe ²⁺ Mono-, di-, oligo- and polysaccharides Sugar alcohols Glycerol Sucralose, saccharin, cyclamate
Coffee, cocoa, chocolate, tea	pH value and acidity Ash alkalinity Chloride Direct reducing sugars Kjehldahl nitrogen Free fatty acids Iodine value Saponification value			Anions: fluoride Organic acids Cations: Na ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ Monosaccharides and disaccharides in instant coffee (ISO 11292) Arabinose, fructose, galactose, glucose, mannose, sucrose, xylose, maltose, lactose Sugar alcohols Glycerol Caffeine

Sample	Parameters for titration	Parameters for voltammetry	Parameters for stability measurement	Parameters for ion chromatography
Beer, vinegar, spirits and wine	pH value and total acid CO ₂ content Ascorbic acid Free and total sulfurous acid Volatile acids Ash alkalinity Chloride Sulfate Total ester content			Anions: fluoride, chlorite, chloride, bromide, nitrate, sulfite, sulfate, phosphate, oxalate Organic acids Cations: Na ⁺ , K ⁺ , NH ₄ ⁺ , Ca ²⁺ , Mg ²⁺ Transition metals: Cu ²⁺ , Zn ²⁺ , Fe ²⁺ , Mn ²⁺ Biogenic amines Monosaccharides, disaccharides and oligosaccharides Sugar alcohols Glycols
Fruit and vegetable juices, fruit nectars and jams	pH value and titratable total acid Ascorbic acid Sulfurous acid (sulfite) Chloride Total phosphorous Sulfate Cations: Ca ²⁺ , Mg ²⁺ , K ⁺ Ash alkalinity Formol number Reducing sugars	Ascorbic acid Pb (AOAC 979-17) Fumaric acid (AOAC 968-16) Saccharin (SLB 41-2.5)		Anions: chloride, phosphate, sulfate, nitrite, phosphite Organic acids Cations: Na ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ Monosaccharides and disaccharides
Milk and dairy products	pH value and titratable acid Chloride Calcium Ascorbic acid Kjehldahl nitrogen	Pb (AOAC 974-13; AOAC 979-17)		Anions: iodide, chloride, phosphate, sulfate, nitrate, nitrite, thiocyanate, perchlorate, cyanurate Organic acids Cations: Na ⁺ , NH ₄ ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ Monosaccharides and disaccharides Choline Melamine
Nuts			Oxidation stability	
Fruit and vegetables	Oxalic acid Total sulfurous acid Chloride	Zn (ISO 6636-1)		
Grains		Cd, Pb (AOAC 982-23)		
Animal and plant fats and oils	Acid value and free fatty acids Hydroxyl number Iodine value Peroxide value Saponification value		Oxidation stability (AOCS Cd 1b-92, ISO 6886)	Anions: phosphate, bromate Cations: Ca ²⁺ , Mg ²⁺
Crackers, baked goods			Oxidation stability	Monosaccharides and disaccharides
Instant noodles			Oxidation stability	
Table and mineral water, drinking water	pH value and acid capacities Ca ²⁺ , Mg ²⁺ and total hardness Chloride, sulfate Sulfides/hydrogen sulfide Total and residual chlorine Permanganate index CO ₂ content Oxygen content according to Winkler	U (DIN 38406-17), CN ⁻ (sample preparation according to DIN 38405-13) Zn, Cd, Pb, Cu, Ni, Co, Tl (DIN 38406-16) Cd (ASTM 3557) Pb (ASTM 3559)		Anions: fluoride, chloride, nitrite, bromide, nitrate, phosphate, sulfate, iodide, silicate, carbonate, chromate (ASTM D 4327-03, EPA 300.1, ISO 10304-1:2007) Oxyhalides: bromate, chlorite, chlorate (ISO 10304-4, EPA 300.1, ASTM D 6581-08) Cations: Na ⁺ , NH ₄ ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ (ISO 14911:1998) Phenols
Soft drinks	Citric acid/citrate Phosphoric acid (cola drinks) Potassium Total phosphorus			Anions: chloride, nitrate, phosphate Organic acids Cations: Na ⁺ , NH ₄ ⁺ , K ⁺ , Ca ²⁺ , Mg ²⁺ Monosaccharides and disaccharides Sugar alcohols Phenylalanine, aspartame, caffeine Glucuronolactone

www.metrohm.com

 **MEP**
instruments

The right chemistry.

MEP Instruments Pty Ltd

PO Box 1880

North Ryde NSW 2113

Tel. 1300 720 485

www.mep.net.au