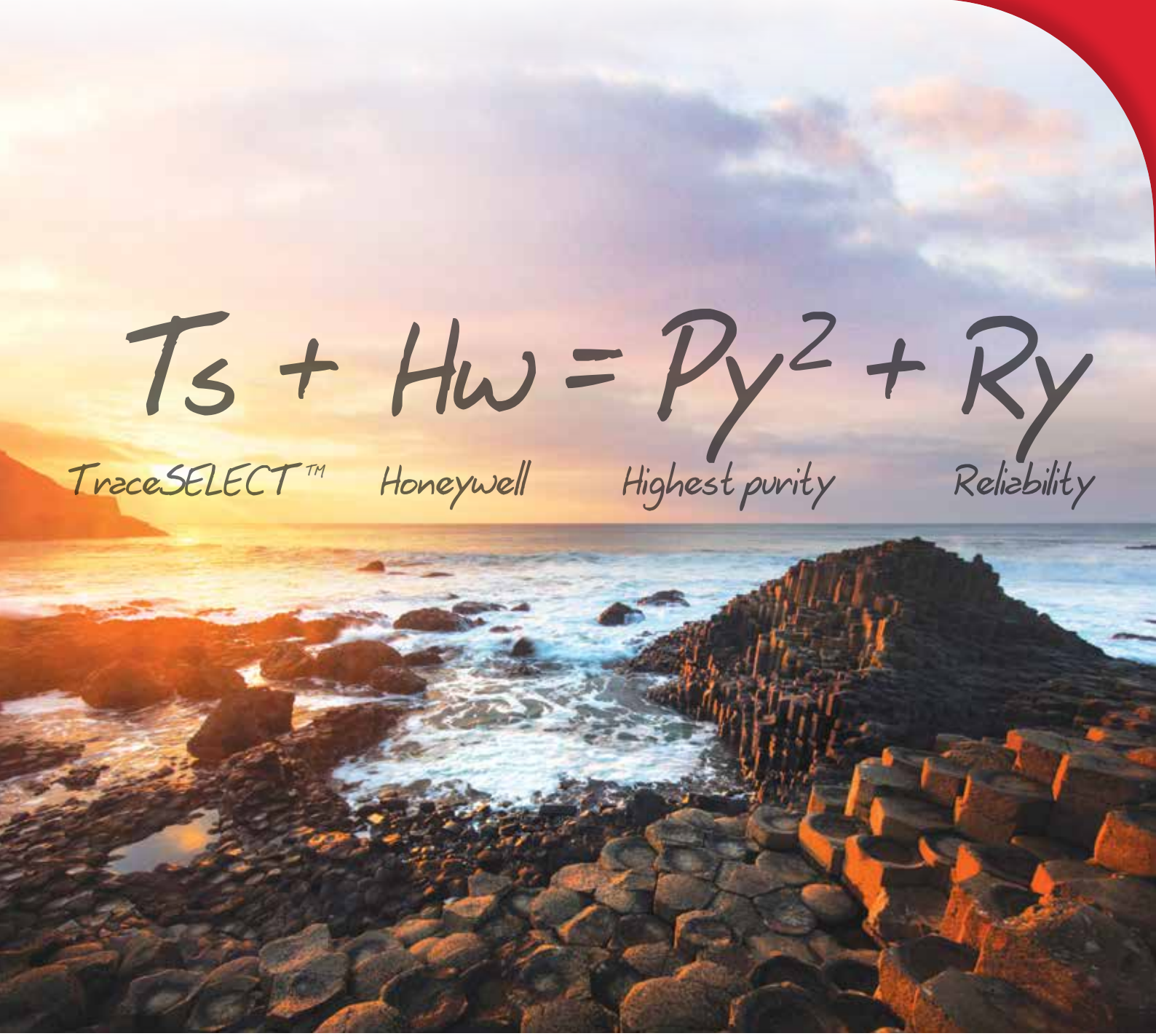


Discover the perfect formula

Inorganic Trace Analysis

TraceSELECT™ High Purity Reagents
for Sample Preparation and Analysis

Honeywell

HONEYWELL RESEARCH CHEMICALS PORTFOLIO:
Riedel-de Haën™ Burdick & Jackson™ *Fluka*™

fisher scientific
part of Thermo Fisher Scientific

Contents

Analysis you can trust

With Honeywell's analytical reagents, superior quality and safety standards are a prime focus. We use a comprehensive Quality Assurance System in line with EN 29001 (ISO 9001) and each of our products is manufactured to clear, guaranteed specifications. We employ a large variety of modern analytical methods, such as inductively coupled plasma atomic emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS) , flame atomic absorption spectroscopy (AAS) and graphite furnace AAS. This allows for specifically tailored control and analysis procedures for each product.

Atomic Emission Spectroscopy Analysis

Reagents for Inorganic Trace Analysis

Sensitive trace analysis applications require extremely pure sample preparation reagents. These digestive reagents cannot contain metal ions or other impurities. In addition, complete decomposition of the sample is required to achieve reproducible and accurate elemental results by instrumental analytical methods.

Sample wet digestion/dissolution is a method that breaks down the components of a matrix into simple chemical forms. This digestion can occur in three ways:

- With the introduction of energy such as heat
- By using a chemical reagent such as an acid
- By a combination of these two methods

Most analytical measurements using highly sensitive methods (AAS, ICP-AES, stripping voltammetry, ion chromatography, etc.) are performed on samples in solution. One of the most effective and economical sample preparation methods is microwave digestion.

In most cases, achieving homogeneity and mineralization of the sample is sufficient. UV photolysis using hydrogen peroxide and either potassium persulfate or nitric acid is very often the method of choice for the decomposition of organic impurities in aqueous solutions.

The most commonly used reagents for wet decomposition are mineral and oxidizing acids. Wet decomposition has the advantage of being effective on both inorganic and organic materials. It often destroys or removes the sample matrix, thus helping to reduce or eliminate some types of interference.

Table 1 provides an annotated overview of the acids and bases used for wet digestion.

Sources

1. Feng, X.; Wu, S.; Wharmby, A.; Wittmeier, A. Microwave digestion of plant and grain standard reference materials in nitric and hydrofluoric acids for multi-elemental determination by inductively coupled plasma mass spectrometry. J. Anal. At. Spectrom. 1999, 14, 939–946.
2. Golimowski J.; Golimowska, K. UV photooxidation as pretreatment step in inorganic analysis of environmental samples. Anal. Chim. Acta. 1996, 325, 111–133.
3. Vandecasteele, C.; Block, C. B. Modern Methods for Trace Element Determination; Wiley: Chichester, UK, 1997; pp 1–8.
4. Sampling and Sample Preparation; Stoeppler, M., Ed; Springer: Berlin, 1997.
5. Sah, R. N.; Miller, R. O. Spontaneous reaction for acid dissolution of biological tissues in closed vessels. Anal. Chem. 1992, 64, 230.
6. Inductively coupled plasmas in analytical atomic spectrometry; Montaser, A.; Golightly, D. W., Eds.; VCH: New York, 1992; pp 473–516.
7. Tracy, M. L.; Moeller, G. Continuous flow vapor generation for inductively coupled argon plasma spectrometric analysis; Part 1: Selenium. J. Assoc. Off. Anal. Chem. 1990, 73, 404–410.
8. Pacquette, H. L.; Elwood, S. A.; Ezer, M.; Simeonsson, J. B. A comparison of continuous flow hydride generation laser-induced fluorescence and laser enhanced ionization spectrometry approaches for parts per trillion level measurements of arsenic, selenium and antimony. J. Anal. At. Spectrom. 2001, 16, 152–158.
9. Sun, Y. C.; et al. Combining electrothermal vaporization inductively coupled plasma mass spectrometry with in situ TMAH thermochemolysis for the direct determination of trace impurities in a polymer-based photoresist. J. Anal. At. Spectrom. 2006, 21, 311–316.
10. Jeitziner, M. High-purity TMAH for alkaline digestion of biological samples. Analytix 2008, 1, 17.
11. Jeitziner, M. High-Purity Reagents for AAS. Analytix 2011, 1, 14.

Table 1

Digestion/Dissolution Acids and Bases

HNO_3	Nitric acid is the most frequently utilized sample dissolution medium. It oxidizes metals not dissolved by HCl and other non-oxidizing acids. Au, Pt metals (except Pd), Nb, Ta, and Zr are not dissolved. Al and Cr are passivated. Sn, Sb, and W give insoluble hydrous oxides. Dissolves most sulfides (except HgS). Unfortunately, the carbon contained in organic materials is only partly converted to CO_2 by HNO_3 at temperatures up to 200 °C. Nitric acid should never be used for the digestion of highly aromatic compounds because of the potential for the formation of highly explosive compounds. In the case of alcohols, the samples should be pretreated with sulfuric acid.
HCl	Hydrochloric acid is used for many salts of weak acids, e.g., carbonates, phosphates, some oxides, and some sulfides.
H_2SO_4	Sulfuric acid is used when its high boiling point (300 °C) is an advantage, as in expelling a volatile product or increasing the reaction rate. It provides dehydrating and oxidizing properties at high temperatures.
$HClO_4$	Perchloric acid is a very powerful oxidizing agent at fuming temperatures (boiling point 203 °C). It is usually mixed with HNO_3 to oxidize easily attacked organic matter that might otherwise react violently with $HClO_4$. H_2SO_4 (dehydrating agent) increases oxidizing power. Good solvent for stainless steel and for sulfides.
HF	Hydrofluoric acid is used for digestion of silacaceous samples and as an auxiliary reagent to HNO_3 or $HClO_4$ to eliminate fluoride. With HNO_3, HF dissolves Ti, W, Nb, and Zr (and their carbides, nitrides, and borides) as a result of formation of complex fluorides. Certain refractory silicates and other minerals are not decomposed; these must be dissolved by fusion.
H_2O_2	Hydrogen peroxide is a very popular oxidizing reagent as it is converted to water and oxygen during the oxidation of biological material. Additional advantages are that there is no acid corrosion of the digestion vessel PTFE walls, no formation of insoluble salts with an acid anion, and no change of the sample matrix by an acid. Because of its strong oxidation power, only small amounts of H_2O_2 need be used so concentrated sample solutions can be obtained.
AcOH	Acetic acid is most often used for the extraction of metallic impurities together with sodium acetate.
HBr	Hydrobromic acid is a non-oxidizing acid. It is used in some special applications because it yields better reductive selectivity in the determination of Se(VI) by Hydride Generation-Laser Induced Fluorescence (HG-LIF) than HCl.
H_3PO_4	Phosphoric acid is commonly used in the semiconductor industry to both clean and etch metal surfaces. The concentration of the phosphoric acid is critical to optimizing these processes.
H_2O	Water ensures the highest accuracy in trace analysis of ppt range by minimizing blank values.
TMAH	Tetramethylammonium hydroxide [$(CH_3)_4NOH$] is an efficient strong alkali used for solubilizing soft tissues and food stuffs. Compared to conventional alkaline sample digestion procedures using NaOH or KOH, using TMAH enables more accurate analysis due to its lower matrix effect. A diluted 0.3 M TMAH solution is also used during the lithographic process in the semiconductor industry.
NaOH	Sodium hydroxide is frequently used for melting digestions at 500 °C. It attacks platinum and porcelain. Residue is dissolved with 1.2 M hydrochloric acid.
KOH	Potassium hydroxide is frequently used for melting digestions at 500 °C. It attacks platinum and porcelain. Residue is dissolved with 1.2 M hydrochloric acid.
K_2CO_3	Potassium carbonate is the classic reagent for melting digestions at 800 °C. Residue is dissolved with hydrochloric acid.

Sample Preparation for Trace Analysis

TraceSELECT™ Ultra and TraceSELECT

Ultra-pure acids, bases, and salts for smelting and wet digestion in environmental, water, and food analysis.

Sample preparation for trace analysis requires reagents of the highest purity. Our TraceSELECT Ultra products for ultra-trace analysis at ppb and even ppt levels are produced by sub-boiling distillation.

Sub-boiling is recognized as the best way to obtain high purity acids with the lowest blank values for ultra-trace analysis. The technique is based on the evaporation of liquid by infrared heating at the surface. It avoids violent boiling and the formation of liquid aerosols that can be transported with the distillate.

To maintain their high purity, TraceSELECT Ultra products are supplied in PTFE PFA (fluoropolymer) bottles. Water and ortho-phosphoric acid are supplied in especially pre-leached HDPE bottles. Recent process improvements have allowed us to reduce our impurity specifications to guarantee the lowest levels of trace impurities in our TraceSELECT Ultra products.

The acids, bases, and salts in the TraceSELECT series have been developed for sample preparation and analysis in the ppb (µg/kg) trace range. Purity and composition are guaranteed with our careful preparation, testing, and verification of the final product for metal content and ionic trace impurities using ICP-OES, ICP-MS and ion chromatography.

To further guarantee purity and stability, TraceSELECT products are packaged in high-quality containers appropriate for each product.

The Honeywell Quality Management System guarantees consistent quality and safety for all TraceSELECT Ultra and TraceSELECT products. The reagents are produced and bottled under clean-room conditions.

For more information, visit: **lab-honeywell.com/traceselect**

Honeywell Fluka -
Ammonium Acetate TraceSELECT
73432-100G

TraceSELECT Ultra Reagents

FS Part Number	HON Product Number	Brand	Product Name	Specification
6000038	07692-250ML	Fluka	Acetic acid	>99.0% (T)
6002971	96208-250ML	Fluka	Hydrochloric acid	>30-35%
60044473	02650-250ML	Fluka	Nitric acid	>65-71%
60044733	12415-250ML	Fluka	Perchloric acid	67-72% (T)
6001146	64957-250ML	Fluka	Phosphoric acid	>85% (T)
60047545	77239-250ML	Fluka	Sulfuric acid	>95% (T)
6001691	14213-250ML	Fluka	Tetramethylammonium hydroxide solution	25% in water
6000039	07692-500ML	Fluka	Acetic acid	>99.0% (T)
60047781	96208-500ML	Fluka	Hydrochloric acid	>30-35%
6001110	02650-500ML	Fluka	Nitric acid	>65-71%
60044734	12415-500ML	Fluka	Perchloric acid	67-72% (T)
6001145	64957-1L	Fluka	Phosphoric acid	>85% (T)
60047546	77239-500ML	Fluka	Sulfuric acid	>95% (T)
6000037	07692-1L	Fluka	Acetic acid	>99.0% (T)
6002970	96208-1L	Fluka	Hydrochloric acid	>30-35%
60044472	02650-1L	Fluka	Nitric acid	>65-71%
60044732	12415-1L	Fluka	Perchloric acid	67-72% (T)
60047544	77239-1L	Fluka	Sulfuric acid	>95% (T)
60044474	02650-2L	Fluka	Nitric acid	>65-71%

TraceSELECT Reagents

FS Part Number	HON Product Number	Brand	Product Name	Specification
60046911	45727-100ML	Fluka	Acetic acid	≥ 99.0% (T)
60044622	09857-100ML	Fluka	Ammonium hydroxide solution	≥ 25% in water (T)
60044585	06454-250ML	Fluka	Formic acid	≥ 88.0% (T)
60044608	08256-100ML	Fluka	Hydrochloric acid	≥ 30% (T)
60047668	84415-100ML	Fluka	Hydrochloric acid	≥ 37% fuming (T)
60046960	47559-100ML	Fluka	Hydrofluoric acid	47-51% (AT)
60047663	84385-250ML	Fluka	Nitric acid	> 69.0% (T)
60047540	77227-100ML	Fluka	Perchloric acid	67-72% (T)
6001143	79614-100ML	Fluka	Phosphoric acid	~ 85% (T)
60045868	30955-250ML	Fluka	Potassium hydroxide solution	≥ 30% in water (T)
6001485	13171-250ML	Fluka	Sodium hydroxide solution	≥ 30% in water (T)
60047676	84716-500ML	Fluka	Sulfuric acid	≥ 95% (T)
6001690	68556-250ML	Fluka	Tetramethylammonium hydroxide solution	25% in water
60047767	95305-250ML	Fluka	Water	
60046914	45727-500ML	Fluka	Acetic acid	≥ 99.0% (T)
60044623	09857-500ML	Fluka	Ammonium hydroxide solution	≥ 25% in water (T)
60044611	08256-500ML	Fluka	Hydrochloric acid	≥ 30% (T)
6000778	84415-500ML	Fluka	Hydrochloric acid	≥ 37% fuming (T)
6000793	47559-500ML	Fluka	Hydrofluoric acid	47-51% (AT)
6001109	84385-500ML	Fluka	Nitric acid	> 69.0% (T)
60047542	77227-500ML	Fluka	Perchloric acid	67-72% (T)
6001144	79614-500ML	Fluka	Phosphoric acid	~ 85% (T)
60047674	84716-1L	Fluka	Sulfuric acid	≥ 95% (T)
60047769	95305-500ML	Fluka	Water	
60046912	45727-1L	Fluka	Acetic acid	≥ 99.0% (T)
60044609	08256-1L	Fluka	Hydrochloric acid	≥ 30% (T)
6001107	84385-1L	Fluka	Nitric acid	> 69.0% (T)

TraceSELECT Reagents (continued)

FS Part Number	HON Product Number	Brand	Product Name	Specification
60047541	77227-1L	Fluka	Perchloric acid	67-72% (T)
60047675	84716-2.5L	Fluka	Sulfuric acid	≥ 95% (T)
60047765	95305-1L	Fluka	Water	
60046913	45727-2.5L	Fluka	Acetic acid	≥ 99.0% (T)
60044610	08256-2.5L	Fluka	Hydrochloric acid	≥ 30% (T)
6001108	84385-2.5L	Fluka	Nitric acid	› 69.0% (T)
60047766	95305-2.5L	Fluka	Water	
60047764	95305-10L	Fluka	Water	

TraceSELECT Salts

FS Part Number	HON Product Number	Brand	Product Name	Specification
6002856	73432-100G	Fluka	Ammonium acetate	≥ 99.9995%
6001869	09725-25G	Fluka	Ammonium chloride	≥ 99.9995%
60044614	09726-25G	Fluka	Ammonium phosphate monobasic	≥ 99.9999%
6001885	09979-100G	Fluka	Ammonium sulfate	≥ 99.9999%
60047738	90033-25G	Fluka	Cesium chloride	≥ 99.9995%
60044946	16722-25G	Fluka	Cesium iodide	≥ 99.9995%
60047219	62462-25G	Fluka	Lithium carbonate	≥ 99.998%
60047173	60348-25G	Fluka	Potassium bisulfate	≥ 99.995%
60047163	60111-50G	Fluka	Potassium carbonate sesquihydrate	≥ 99.995%
6001848	05257-25G	Fluka	Potassium chloride	≥ 99.9995%
6002764	60216-25G	Fluka	Potassium phosphate monobasic	≥ 99.995%
60047178	60371-25G	Fluka	Potassium hydroxide hydrate	≥ 99.995%
60045831	30533-100G	Fluka	Potassium iodide	≥ 99.999%
6002774	60347-100G	Fluka	Potassium phosphate dibasic	≥ 99.999%
60047180	60429-25G	Fluka	Potassium nitrate	≥ 99.995%
6002757	59929-25G	Fluka	Sodium acetate	≥ 99.999%
6002830	71347-25G	Fluka	Sodium carbonate	≥ 99.9999%
6002697	38979-25G	Fluka	Sodium chloride	≥ 99.999%
6001399	01968-25G	Fluka	Sodium hydroxide monohydrate	≥ 99.9995%
60047397	71752-25G	Fluka	Sodium nitrate	≥ 99.999%
60047377	71629-100G	Fluka	Sodium phosphate dibasic	≥ 99.999%
6002839	71492-25G	Fluka	Sodium phosphate monobasic	≥ 99.999%
6001868	09725-100G	Fluka	Ammonium chloride	≥ 99.9995%
60044613	09726-100G	Fluka	Ammonium phosphate monobasic	≥ 99.9999%
60047737	90033-100G	Fluka	Cesium chloride	≥ 99.9995%
60047218	62462-100G	Fluka	Lithium carbonate	≥ 99.998%
6001847	05257-100G	Fluka	Potassium chloride	≥ 99.9995%
6002763	60216-100G	Fluka	Potassium phosphate monobasic	≥ 99.995%
60047179	60429-100G	Fluka	Potassium nitrate	≥ 99.995%
6002756	59929-100G	Fluka	Sodium acetate	≥ 99.999%
6002829	71347-100G	Fluka	Sodium carbonate	≥ 99.9999%
6002696	38979-100G	Fluka	Sodium chloride	≥ 99.999%
6001398	01968-100G	Fluka	Sodium hydroxide monohydrate	≥ 99.9995%
60047396	71752-100G	Fluka	Sodium nitrate	≥ 99.999%
6002838	71492-100G	Fluka	Sodium phosphate monobasic	≥ 99.999%

Melting digestion is used for solid samples like ores, rock, metals, alloys, ceramic, and cement, in order to obtain a homogenous residue, which can be dissolved in diluted TraceSELECT acids. Our TraceSELECT salts obtain a very high purity, with metal traces typically below 10 µg/kg (10 ppb).

Trace Analysis: High Purity Reagents

Matrix Modifiers

In graphite furnace AAS, element determinations are increasingly being carried out with matrix modifiers. Chemical modification should be considered if an analyte is highly volatile, or if the analyte and matrix volatilize at similar temperatures.

Such modification would allow ashing at higher (or atomization at lower) furnace temperatures, resulting in elimination of the matrix with no loss of the analyte (or atomization of the analyte, but not the matrix).

Depending on the element to be determined, various substances are used. However, palladium nitrate has become one of the most popular. A primary criterion for such substances is the absence of the element to be analyzed. For this reason, the following recommended reagents have been specially tested for their suitability as matrix modifiers.

Matrix Modifiers

FS Part Number	HON Product Number	Brand	Product Name	Specification
60048473	428884-100ML	Fluka	Lanthanum matrix modifier solution	5% La^{3+} in 1% HCl
60048476	428892-100ML	Fluka	Magnesium matrix modifier solution	2% Mg^{2+} in <5% HNO_3
60048401	95164-250ML	Fluka	Cesium chloride/Lanthanum chloride matrix modifier solution	CsCl and $LaCl_3$

Spectroscopic Buffers for Flame AAS

In flame AAS, spectroscopic buffers are often used to suppress physical, ionization, and chemical interferences. The Schuhknecht and Schinkel buffer solution, as used in the determination of alkali elements, has become particularly important.

A multi-element standard for lithium, sodium, and potassium is also available for this method. The Schinkel buffer solution enables the method to be expanded to include up to 14 mono- and divalent elements, with simple calibration being all that is required for the analysis.

Spectroscopic Buffers for Flame AAS

FS Part Number	HON Product Number	Brand	Product Name	Specification
60048401	95164-250ML	Fluka	Cesium chloride/Lanthanum chloride matrix modifier solution	CsCl and $LaCl_3$
60048610	20980-500ML	Fluka	Aluminum nitrate-Cesium chloride buffer	Buffer solution according to Schuhknecht and Schinkel
60048400	20982-500ML	Fluka	Cesium chloride-Lanthanum chloride buffer	Buffer solution according to Schinkel

1. Schuhknecht, W.; Schinkel, H. Fresenius J. Anal. Chem. 1963, 161, 194.
2. Schinkel, H. Fresenius J. Anal. Chem. 1984, 10, 317.

Reducing Agents for Hydride AAS

Hydride AAS is used for the analysis (especially traces) of arsenic, antimony, tin, selenium, bismuth, and mercury. It is used to separate and preconcentrate analytes from sample matrices by a reaction that turns them into their hydride vapors. Sodium borohydride is the common reagent of choice for the reduction.

Fluka reagents are specifically analyzed to ensure the absence of hydride generating metals.

Reducing Agents for Hydride AAS

FS Part Number	HON Product Number	Brand	Product Name	Specification
60047350	71321-25G	Fluka	Sodium borohydride	≥ 99%
60047349	71321-100G	Fluka	Sodium borohydride	≥ 99%
60045831	30533-100G	Fluka	Potassium iodide	≥ 99.999%

Solvents for Trace Metal Speciation Analysis

TraceSELECT™ solvents for LC-ICP-MS applications

Honeywell has developed high purity TraceSELECT solvents for speciation analysis by LC-ICP-MS. TraceSELECT solvents undergo rigorous purification procedures. This is followed by UV spectroscopy, IC, and ICP-MS testing to assure high chemical purity and high UV transmittance.

The blank values for metal traces in these solvents are in the ppb range or lower.

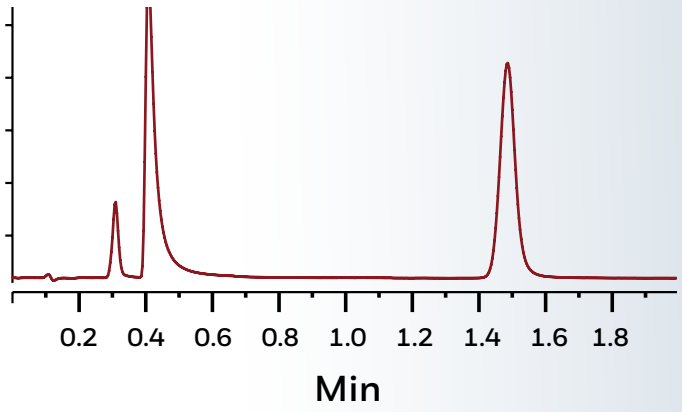
The toxicity of trace metals in food, clinical chemistry, biology, and environmental sciences is an area of increasing interest. In the environment, many diverse species of an element can be present. In addition, different species of the same element can possess very different degrees of toxicity.

Monitoring elemental species requires an analytical method that is sensitive and specific enough to resolve and quantify the individual species at ultra-trace levels. An individual toxic species may constitute only a fraction of an element's total concentration in a sample.

The coupling of the two well established analytical techniques, HPLC and inductively coupled plasma-mass spectrometry (ICP-MS), is straightforward. This is primarily because the flow rates commonly used with LC are compatible to conventional liquid sample introduction systems, such as those based on pneumatic nebulization.

Thus, the outlet of the LC column is directly connected to the ICP-MS nebulizer. This technique is especially useful in carrying out automated high-throughput speciation analysis. International trends show speciation of metals as an area of very high research interest. In the future, speciation of biological samples will undoubtedly involve determinations of which organic molecules attract which metals in specific sample types.

ICP-MS is a superior detection technique for trace elements in general, but especially for elements of interest, such as arsenic, selenium, cadmium, iodine, and others in chromatographic eluents.



The chromatogram of three mercury species
Hg^{2+}, $MeHg^{+}$, $EtHg^{+}$ obtained by HPLC-ICP-MS

Definition of Speciation Analysis

The International Union of Pure and Applied Chemistry (IUPAC) defines speciation analysis as the "analytical activities of identifying and/or measuring the quantities of one or more individual chemical species in a sample."

A chemical species is a "specific form of an element defined as to isotopic composition, electronic or oxidation state, and/or complex or molecular structure."

In speciation analysis, the objective is usually to determine the identity and/or concentration of one or more chemical species in a sample, often of natural origin and therefore potentially containing many different species. Care must be taken to choose and execute the analysis to maximize sensitivity and specificity.

Performing a speciation analysis in a complex mixture involves separation, identification, and characterization of various forms of elements in the sample. The most commonly used strategy for speciation analysis is to perform a separation step before a generic detector.

Honeywell Riedel de Haën - 2-Propanol TraceSELECT
04516-1L

LC separation coupled with ICP-MS

The hyphenated technique HPLC-ICP-MS is a robust, sensitive element-selective method capable of giving a complete picture of the elemental species in a solution.

The elemental response is usually independent of species, so it is often possible to quantify a species even when its structure is unknown (assuming good HPLC recovery). Identification, however, is based solely on retention time matching. Therefore, a compound in the sample can be identified only by comparison with a standard.

TraceSELECT Solvents Ideal for Speciation Analysis

FS Part Number	HON Product Number	Brand	Product Name	Specification
60044463	01324-1L	Riedel-de Haën	Acetonitrile	≥99.9%
60044560	04516-1L	Riedel-de Häen	2- Propanol	≥99.9%
60046853	42105-1L	Riedel-de Haën	Methanol	≥99.9%
60047747	92328-1L	Riedel-de Haën	Ethylene glycol butyl ether	≥ 99.5%
60047336	69508-1L	Riedel-de Haën	Acetone	≥ 99.9%
60047444	72781-1L	Riedel-de Haën	N,N-Dimethylformamide	≥ 99.99995%

1. Michalke, B. The coupling of LC to ICP-MS in element speciation; Part II: Recent trends in application. Trends in Analytical Chemistry, 2002, 21(3), 154–165.
2. IUPAC, Pure and Applied Chemistry, 2000, 72, 1453–1470.

Ultra Pure Reagents for Voltammetry

TraceSELECT reagents for ultra-trace analysis and metal speciation

Voltammetry is predominantly used for inorganic trace analysis of anions and cations, but can also be used for the determination of various organic compounds. The most important fields of application of inorganic determinations are in metallurgy, environmental analysis, food analysis, toxicology, and clinical analysis.

This technique is also a preferred method for the determination of certain metal speciations, such as Fe(II)/Fe(III) or Cr(III)/Cr(VI). When mercury is used as an electrode in a voltammetric cell, the technique is called polarography.

The reduction of metals into mercury is more favourable than reduction to the solid-state electrode. Further on there is always a clean new Hg electrode surface available for each measurement.

Honeywell Fluka - Nitric Acid TraceSELECT
84385-2.5L

Multi-mode Electrode (MME)
Published with kind permission of Metrohm AG, Switzerland

High Purity Reagents for Voltammetry

FS Part Number	HON Product Number	Brand	Product Name	Specification
60047756	94068-100G	Fluka	Citric acid monohydrate	≥99.9998%
60044575	05878-100G	Fluka	L-Ascorbic acid	≥99.9998%
60044761	12819-25G	Fluka	DL-Tartaric acid	≥99.9995%
60046758	39692-25G	Fluka	Ethylenediaminetetraacetic acid	≥99.995%
60047753	93722-100G	Fluka	Oxalic acid dihydrate	≥99.9999%

Honeywell

In the United States:

For customer service, call 1-800-766-7000
To fax an order, use 1-800-926-1166
To order online: fishersci.com

BN20173608

fisher scientific
part of Thermo Fisher Scientific