SPEX®

# Inorganic Quality Control Samples

For over 35 years, SPEX Industries, Inc., has been your source for specialty inorganic standards: liquid or solid, aqueous or organic base. No matter what type of instrument you use: ICP, ICP-MS, AA, GFAA, IC, DC ARC, XRF, and no matter what type of method you use... your results are only as accurate as the standard you are using.

Since 1991, SPEX has been your most reliable source for Inorganic Quality Control Samples for environmental analysis. SPEX quality control samples are used for a variety of US EPA methods and are certified by SPEX and the US EPA through a Cooperative Research and Development Agreement (CRADA). They are to be used in the assessment of the performance of an individual laboratory's analytical systems and methods as specified in various US EPA wastewater and drinking water protocols. QC samples are not to be used as standards.

**QUALITY:** We provide our customers with QUALITY samples for environmental analysis. The QC concentrates are manufactured from the highest quality materials available. All materials are analyzed for impurities. We stand behind our quality: a one year guarantee and our Certificates of Evaluation are your assurances of quality.

**RELIABILITY:** For over three decades chemists have relied on SPEX. All our QC samples undergo rigorous testing and certification for HOMOGENEITY, STABILITY, and ACCURACY. All samples manufactured by SPEX must pass dual certification by both the US EPA and SPEX Industries. SPEX also performs independent second method analysis on each sample (when applicable).

**CONVENIENCE:** We make it very CONVENIENT! Each sample comes supplied with instruction sheets, Certificate of Evaluation, and Material Safety Data documentation. The instruction sheets highlight the scope, applications, analytical methods, sample preparation, and analysis. The Certificate of Evaluation includes the true value, mean recovery, standard deviation and 95% confidence interval.

**TOTAL CUSTOMER SATISFACTION:** We are committed to "Serving our Customers" and striving for "Total Customer Satisfaction". Our order department, technical application support, and chemical sales staff are waiting to assist you. Let us put our 38 years of knowledge to work for your laboratory. If you have a standardization, quality control or purity problem, call us for advice, recommendations, and reliable SPEX products to solve your problem.

SPEX has the QC samples to meet your needs! We have made Inorganic Spectroscopy our business and our reputation... with QUALITY, RELIABILITY, CONVENIENCE, and TOTAL CUSTOMER SATISFACTION. We know you have come to expect nothing less from us.

US EPA CERTIFIED

## *SPEX Inorganic Quality Control Samples*

| Catalog # | Description | # of Ampules |
|---|---|---|
| QCS-TMAA | Trace Metal-AA | 3 ampule set |
| QCS-ICP | Trace Metal-ICP | 2 vial set |
| QCS-TMWS | Trace Metal-Water Supply | 1 ampule |
| QCS-CYN | Cyanide | 2 ampule set |
| QCS-RESCL | Residual Chlorine | 1 ampule |
| QCS-RES | Residues | 2 vial set |
| QCS-MIN | Minerals | 3 ampule set |
| QCS-TUR | Turbidity | 1 ampule |
| QCS-PHEN | Phenolics | 2 ampule set |
| QCS-COR | Corrosivity / Sodium | 2 ampule set |
| QCS-DEM | Demand | 1 ampule |
| QCS-NUT | Nutrients | 2 ampule set |
| QCS-OGR | Oil & Grease | 1 ampule |
| QCS-AI | Anions | 1 ampule |
| QCS-TCLP | Toxicity Characteristic Leachate Procedure - Spike | 1 ampule |
| QCS-ICPMS | Trace Metal-ICPMS | 1 ampule |
| QCS-IS | Internal Standard Stock-ICPMS | 5 ampule set |

US EPA SPEX CERTIFIED

## Trace Metal-AA Catalog #: QCS-TMAA

3 ampule set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix 5% $HNO_3$ 1** | | |
| Arsenic | 5 | 206.2, 206.3 |
| Barium | 10 | 208.1, 208.2 |
| Cadmium | 0.5 | 213.1, 213.2 |
| Chromium | 5 | 218.1, 218.2 |
| Copper | 5 | 220.1, 220.2 |
| Lead | 5 | 239.1, 239.2 |
| Mercury | 0.2 | 245.1, 245.2 |
| Selenium | 5 | 270.2, 270.3 |
| Silver | 1 | 272.1, 272.2 |
| **2 Ampule 2 Matrix 5% $HNO_3$ 2** | | |
| Aluminum | 10 | 202.1, 202.2 |
| Antimony | 10 | 204.1, 204.2 |
| Beryllium | 1 | 210.1, 210.2 |
| Cobalt | 5 | 219.1, 219.2 |
| Iron | 5 | 236.1, 236.2 |
| Manganese | 1 | 243.1, 243.2 |
| Molybdenum | 3 | 246.1, 246.2 |
| Nickel | 3 | 249.1, 249.2 |
| Thallium | 5 | 279.1, 279.2 |
| Vanadium | 10 | 286.1, 286.2 |
| **3 Ampule 3 Matrix 5% $HNO_3$ 3** | | |
| Barium | 500 | 208.1, 208.2 |
| Calcium | 500 | 215.1 |
| Iron | 200 | 236.1, 236.2 |
| Magnesium | 50 | 242.1 |
| Potassium | 100 | 258.1 |
| Sodium | 100 | 273.1, 273.2 |
| Zinc | 50 | 289.1, 289.2 |

## NEW Trace Metal-ICP Catalog #: QCS-ICP

2 vial set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Method |
|---|---|---|
| **1 Vial 1 Matrix 5% $HNO_3$ 1** | | |
| Antimony | 10 | 200.7 |
| Arsenic | 10 | 200.7 |
| Beryllium | 10 | 200.7 |
| Cadmium | 10 | 200.7 |
| Calcium | 10 | 200.7 |
| Chromium | 10 | 200.7 |
| Cobalt | 10 | 200.7 |
| Copper | 10 | 200.7 |
| Iron | 10 | 200.7 |
| Lead | 10 | 200.7 |
| Lithium | 10 | 200.7 |
| Magnesium | 10 | 200.7 |
| Manganese | 10 | 200.7 |
| Molybdenum | 10 | 200.7 |
| Nickel | 10 | 200.7 |
| Selenium | 10 | 200.7 |
| Strontium | 10 | 200.7 |
| Thallium | 10 | 200.7 |
| Titanium | 10 | 200.7 |
| Vanadium | 10 | 200.7 |
| Zinc | 10 | 200.7 |
| **2 Vial 2 Matrix 5% $HNO_3$ / tr F- 2** | | |
| Aluminum | 100 | 200.7 |
| Barium | 100 | 200.7 |
| Boron | 100 | 200.7 |
| Potassium | 1000 | 200.7 |
| Silicon | 500 | 200.7 |
| Silver | 50 | 200.7 |
| Sodium | 100 | 200.7 |

## Trace Metal-Water Supply

Catalog #: QCS-TMWS

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix 5% $HNO_3$ 1** | | |
| Arsenic | 2 | 206.2, 206.3 |
| Barium | 30 | 208.1, 208.2 |
| Cadmium | 0.4 | 213.1, 213.2 |
| Chromium | 3 | 218.1, 218.2 |
| Lead | 2 | 239.1, 239.2 |
| Mercury | 0.3 | 245.1, 245.2 |
| Selenium | 0.5 | 270.2, 270.3 |
| Silver | 2.5 | 272.1, 272.2 |

NEW

## Cyanide Catalog #: QCS-CYN

2 ampule set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix $H_2O$ 1** | | |
| Cyanide (From Potassium Ferricyanide) | 25 | 335.1[EPA] |
| **2 Ampule 2 Matrix $H_2O$ 2** | | |
| Cyanide (From Potassium Cyanide) | 25 | 335.2[EPA], 335.3[EPA] D2036-19[ASTM] 4500-CNF[SM] |

EPA = US EPA Analytical Methods
SM = "Standard Methods" 18th Edition
ASTM = American Society Testing and Materials

## Residual Chlorine Catalog #: QCS-RESCL

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix $H_2O$ 1** | | |
| Total or Free Residual Chlorine | 200 | 330.1, 330.2, 330.3, 330.4 330.5 |

## Residues Catalog #: QCS-RES

2 vial set, 5g each

| Analyte | Concentration After Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Vial 1 1** | | |
| Filterable Residue | 410 | 160.1 |
| Non-Filterable Residue | 31.8 | 160.2 |
| Total Residue | 442 | 160.3 |
| **2 Vial 2 2** | | |
| Filterable Residue | 289 | 160.1 |
| Non-Filterable Residue | 279 | 160.2 |
| Total Residue | 568 | 160.3 |
| Volatile Non-Filterable Residue | 115 | 160.4 |
| Total Volatile Residue | 115 | 160.4 |

## Minerals Catalog #: QCS-MIN

3 ampule set, 21 mL each

| Analyte | Concentration After Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1-2** | **Ampules 1 & 2 Matrix 1% HCl** | **1-2** |
| Conductance | 280 | 120.1 |
| Hardness, Total | 70.5 | 130.1, 130.2 |
| Total Dissolved Solids | 150 | 160.1 |
| Calcium | 20 | 200.7, 215.1, 215.2 |
| Magnesium | 5 | 200.7, 242.1 |
| Potassium | 5 | 200.7, 258.1 |
| Sodium | 20 | 200.7, 273.1 |
| Alkalinity, Total | 24.2 | 310.1, 310.2 |
| Chloride | 51.6 | 325.1, 325.2, 325.3 |
| Fluoride | 1 | 340.1, 340.2, 340.3 |
| Sulfate | 20 | 375.1, 375.2, 375.3 375.4 |
| **3** | **Ampule 3 Matrix $H_2O$** | **3** |
| pH | 6.0 | 150.1 |

## Turbidity Catalog #: QCS-TUR

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (NTU) | US EPA Analytical Method |
|---|---|---|
| **1** | **Ampule 1 Matrix $H_2O$** | **1** |
| Turbidity | 500 | 180.1 |

## Phenolics Catalog #: QCS-PHEN

2 ampule set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1** | **Ampule 1 Matrix $H_2O$** | **1** |
| Phenol | 5 | 420.1, 420.2, 420.3 |
| **2** | **Ampule 2 Matrix $H_2O$** | **2** |
| Phenolics, Total Recoverable | 10 | 420.1, 420.2 420.3 |

NEW

## Corrosivity/Sodium Catalog #: QCS-COR

2 ampule set, 21 mL each

| Analyte | Concentration After Dilution (mg/L) | Analytical Methods |
|---|---|---|
| **1-2** | **Ampules 1 & 2 Matrix $H_2O$** | **1-2** |
| pH | 9.12 | 150.1[EPA] |
| Total Dissolved Solids | 240 | 160.1[EPA], 2540C[SM] |
| Calcium | 125 | 200.7[EPA], 215.1[EPA], 3111B[SM] |
| Alkalinity | 40 | 310.1[EPA], 2320B[SM] |
| Sodium | 18 | 200.7[EPA], 273.1[EPA] |
| Langelier Index | 0.85 | |

EPA = US EPA Analytical Methods SM = "Standard Methods" 18th Edition

## Demand Catalog #: QCS-DEM

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1** | **Ampule 1 Matrix $H_2O$** | **1** |
| Biochemical Oxygen Demand (BOD) | 5065 | 405.1 |
| Carbonaceous BOD (CBOD) | 5065 | 405.1 |
| Chemical Oxygen Demand (COD) | 5225 | 410.1, 410.2 410.3, 410.4 |
| Organic Carbon, Total (TOC) | 2050 | 415.1, 415.2 |

## Nutrients Catalog #: QCS-NUT

2 ampule set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix $H_2O$ 1** | | |
| Ammonia Nitrogen | 200 | 350.1, 350.2, 350.3 |
| Nitrate Nitrogen | 200 | 352.1 |
| Nitrate-Nitrite Nitrogen | 200 | 353.1, 353.2, 353.3 |
| Orthophosphate Phosphorus | 50 | 365.1,365.2, 365.3 |
| **2 Ampule 2 Matrix $H_2O$ 2** | | |
| Total Kjeldahl Nitrogen | 500 | 351.1, 351.2, 351.3, 351.4 |
| Total Phosphorus | 150 | 365.1, 365.2, 365.3, 365.4 |

## Oil & Grease Catalog #: QCS-OGR

1 ampule, 3 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Method |
|---|---|---|
| **1 Ampule 1 Matrix n-Propanol 1** | | |
| Oil & Grease, Total Recoverable | 20 | 413.1 |

This QC sample is NOT for use with EPA methods 418.1 Petroleum Hydrocarbons and 413.2 Spectrophotometric, Infrared.

NEW

## Anions Catalog #: QCS-AI

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix $H_2O$ 1** | | |
| Bromide | 200 | 300.0 |
| Chloride | 2000 | 300.0 |
| Fluoride | 400 | 300.0, 340.1, 340.2, 340.3 |
| Nitrate Nitrogen | 1000 | 300.0, 352.1 |
| Nitrite Nitrogen | 100 | 300.0, 353.1, 353.2, 353.3 |
| Orthophosphate Phosphorus | 400 | 300.0 |
| Sulfate | 2000 | 300.0 |

This replaces QCS-NF, Nitrate/Fluoride QC sample

NEW

## Toxicity Characteristic Leachate Procedure TCLP-Spike Catalog #: QCS-TCLP

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Methods |
|---|---|---|
| **1 Ampule 1 Matrix 5% $HNO_3$ 1** | | |
| Arsenic | 250 | 200.7, 206.2, 206.3 |
| Barium | 5000 | 200.7, 208.1, 208.2 |
| Cadmium | 50 | 200.7, 213.1, 213.2 |
| Chromium | 250 | 200.7, 218.1, 218.2 |
| Lead | 250 | 200.7, 239.1, 239.2 |
| Mercury | 10 | 200.7, 245.1, 245.2 |
| Selenium | 50 | 200.7, 270.2, 270.3 |
| Silver | 250 | 200.7, 272.1, 272.2 |

QCS-TCLP is a spike sample not a quality control sample.

NEW

## Trace Metal-ICPMS Catalog #: QCS-ICPMS

1 ampule, 21 mL

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Method |
|---|---|---|
| **1 Ampule 1 Matrix 5% $HNO_3$ 1** | | |
| Aluminum | 10 | 200.8 |
| Antimony | 10 | 200.8 |
| Arsenic | 10 | 200.8 |
| Barium | 10 | 200.8 |
| Beryllium | 10 | 200.8 |
| Cadmium | 10 | 200.8 |
| Chromium | 10 | 200.8 |
| Cobalt | 10 | 200.8 |
| Copper | 10 | 200.8 |
| Lead | 10 | 200.8 |
| Manganese | 10 | 200.8 |
| Molybdenum | 10 | 200.8 |
| Nickel | 10 | 200.8 |
| Selenium | 10 | 200.8 |
| Silver | 10 | 200.8 |
| Thalium | 10 | 200.8 |
| Thorium | 10 | 200.8 |
| Uranium | 10 | 200.8 |
| Vanadium | 10 | 200.8 |
| Zinc | 10 | 200.8 |

NEW

# Internal Standard Stock Solution-ICPMS

Catalog #: QCS-IS

5 ampule set, 21 mL each

| Analyte | Concentration Before Dilution (mg/L) | US EPA Analytical Method |
|---|---|---|
| 1 | Ampule 1 Matrix 2% $HNO_3$ | 1 |
| Bismuth | 100 | 200.8 |
| 2 | Ampule 2 Matrix 2% $HNO_3$ | 2 |
| Indium | 100 | 200.8 |
| 3 | Ampule 3 Matrix 2% $HNO_3$ | 3 |
| Scandium | 100 | 200.8 |
| 4 | Ampule 4 Matrix 2% $HNO_3$ | 4 |
| Terbium | 100 | 200.8 |
| 5 | Ampule 5 Matrix 2% $HNO_3$ | 5 |
| Yttrium | 100 | 200.8 |

QCS-IS is an Internal Standard Stock sample, not a quality control sample.

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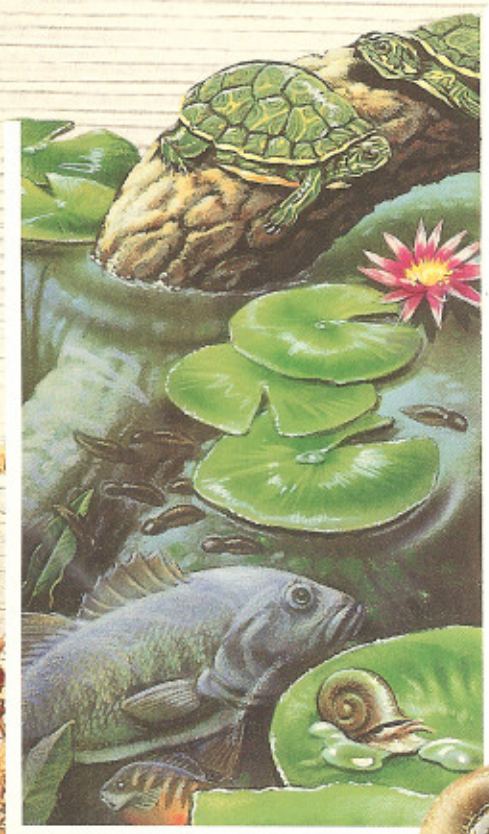

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