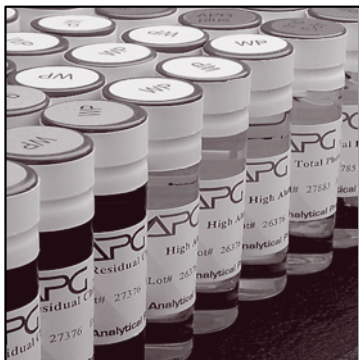
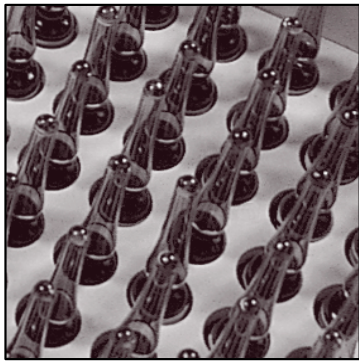


DMRQA

Study 28

SAMPLE PREPARATION BOOKLET



General Sample Preparation Instructions

This booklet contains a complete set of sample preparation instructions for each of your DMRQA Study 28 samples. Please review all instructions before you begin your sample analysis. Please note that all results must be recorded on the Data Return Form in the back of your Data Return Booklet.

The DMRQA samples you have received are designed, prepared, and verified to meet the following requirements:

- Verified to meet all requirements as presented in the DMRQA Study 28 Announcement Letter.
- A2LA accreditation is granted to APG for the design, preparation, and operation of PT schemes that meet the requirements of ISO Guide 43-1:1997, ILAC G13:2000, EPA National Standards for Water Proficiency Testing Studies Criteria Document, and relevant sections of ISO Guide 34:2000, ISO/IEC 17025:2005 and 2003 NELAC Chapter 2 and Chapter 5 (Certification Code 2430.01).
- Analytical Products Group, Inc.'s Quality System is registered with DNV Certification to meet the ISO 9000:2000 standard to design, manufacture, and distribute chemical reference materials and operate Proficiency Testing Programs (Certificate #98-HOU-AQ-9513).
- Certified to meet ISO/REMCO Harmonized Protocol for Proficiency Testing of Analytical Laboratories.
- Certified to meet ASTM E1301.
- In compliance with the NELAC/EPA Fields of Testing.

Dear Laboratory:

The US EPA and State Agencies Discharge Monitoring Report – Quality Assurance (DMRQA) Program for 2008 is upon us. Analytical Products Group, Inc. would like to thank you for choosing us to be your Proficiency Testing Provider.

With clear, easy to follow instructions and online data reporting, APG is committed to making this year's Study 28 a success for your organization. Should you have any questions, please contact us. Account executives, technical chemists, and PT coordinators at APG are ready to help you solve any problem.

APG has tried to simplify the process to complete the requirements of DMRQA Study 28. Condensed booklets and online data reporting are designed to reduce your workload. The booklet you are reviewing is the Sample Preparation Instruction Booklet which is used for sample analysis. Please read through this booklet carefully to ensure that you understand all procedures before beginning DMRQA Study 28.

We hope to have provided you with the information needed to smoothly complete this year's study. However, do not hesitate to call us with any questions or comments you may have.

Thank you for choosing APG.

Sincerely,



Michael Haller, Operations Manager

Sample Preparation Instruction Booklet

DMRQA Study 28

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Demand (Catalog #6010)

Sample Description

The enclosed vial may be analyzed for Biochemical Oxygen Demand (BOD), Carbonaceous BOD (CBOD), Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC). The sample when properly diluted will give concentrations in the ranges show below:

	Range		Units
Biochemical Oxygen Demand	9	158	mg/L
Carbonaceous BOD	8	136	mg/L
Chemical Oxygen Demand	15	256	mg/L
Total Organic Carbon	6	101	mg/L

Instructions

- Record the Sample Lot Number _____
- Pipet 20 ml of the sample using a volumetric pipet to a one (1) liter volumetric flask and dilute to volume with laboratory grade water.
- Samples must be seeded for Biochemical Oxygen Demand and Carbonaceous BOD analysis per your typical method.
- pH adjustment is also required per the method.

Fluoride (Catalog #6210)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Fluoride	0.3	4	mg/L

Instructions

- Record the Sample Lot Number _____
- Use a volumetric pipet to transfer 10.0 mL of the sample to a one (1) Liter volumetric flask and dilute to volume with laboratory grade water.

Hexavalent Chromium (Catalog #6250)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Hexavalent Chromium	45	880	µg/L

Instructions

- Record the Sample Lot Number _____
- Pipet 10.0 mL of the sample into a one (1) Liter volumetric flask and dilute to the mark with laboratory grade water.

Microbiological (Catalog #6260)

Microbiological Samples will be shipped for Next Day delivery.

You will receive a Data Return Book and Sample Preparation Instructions with the samples.

Please notice the addition of Escherichia coli - MF and Escherichia coli - MPN to accommodate specific certification requirements. Results should be reported for Escherichia coli if it is identified this way on your certification.

This microbiological test sample is supplied as a freeze dried sample in an aseptically sealed 5 mL vial and is designed for the quantitative determination of Total Coliforms and Fecal Coliforms as E. coli. in the range 20 to 2400 CFU/100mL (or MPN/100mL) based on accepted microbial methods. One hundred (100) milliliters of Phosphate Buffer solution is provided for reconstitution of the freeze dried sample.

Warning!

Only individuals with bacteriological training should use this product. Disinfect any spills and sterilize containers. Though the microorganisms used for this proficiency test are non-pathogenic, aseptic technique should be used with the assumption that all samples are potentially pathogenic. Aseptic technique is also necessary to avoid cross contamination.

Important!

FREEZE the sample vial upon arrival. Keep the freeze dried sample **FROZEN** until time of reconstitution. The Phosphate Buffer should be stored at room temperature. Once the sample is reconstituted, testing should proceed immediately. Unused sample should be disposed in accordance with institutional and government guidelines.

Please continue to the next page for Preparation Instructions...

Microbiological (Catalog #6260) Continued

Preparation for Analysis

1. Add approximately one (1) mL of the Phosphate Buffer solution buffer to the vial containing the lyophilized microorganisms using the sterile transfer pipettes supplied.
2. Mix well, by cycling the Phosphate Buffer solution in and out of the vial with the pipette.
3. Completely transfer the contents of the vial to the Phosphate Buffer solution buffer bottle using the transfer pipette.
4. Shake the bottle to disperse the organisms. The sample is now ready for analysis.

Volume to be used depends on the method. Select sample portion that would yield an ideal count. This sample when prepared according to these instructions is in the NELAC specified range of 20-2400 CFU/100mL (or MPN/100mL)

Record the results of the analysis in CFU/100mL or MPN/100mL on the Data Reporting Form. Appropriately dispose of sample vials, liquid handling materials, and Phosphate Buffer bottles.

Note: Due to the nature of microbiological samples, to run multiple methods, additional samples must be purchased.

	Range		Units
Fecal Coliforms as E. Coli.- MF	20	2400	CFU/100mL
Fecal Coliforms as E. Coli.- MPN	20	2400	MPN/100mL
Total Coliforms - MF	20	2400	CFU/100mL
Total Coliforms - MPN	20	2400	MPN/100mL
Escherichia coli - MF	20	2400	CFU/100mL
Escherichia coli - MPN	20	2400	MPN/100mL

Minerals (Catalog #6200)

Sample Description

The enclosed vials when properly diluted will result in a sample with a concentration in the range shown below:

One Sample is prepared from Vial #1 and Vial #2. However, caution should be taken not to directly mix the contents of the vials.

	Range		Units
Alkalinity as CaCO ₃	10	120	mg/L
Chloride	35	275	mg/L
Conductivity	200	930	µmhos/cm
Sulfate	5	125	mg/L
Total Dissolved Solids at 180° C	140	650	mg/L
Total Hardness as CaCO ₃	17	440	mg/L

Instructions

- Record the Sample Lot Number _____
- Add 900 ML of laboratory grade water to a one (1) Liter volumetric flask, pipette 10.0 mL of Vial #1 and 10.0 mL of Vial #2 into flask.
- Mix well and dilute to the mark with laboratory grade water.

Nitrite as N (Catalog #6240)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Nitrite as N	0.4	4	mg/L

Instructions

- Record the Sample Lot Number _____
- Pipet 10.0 mL of the sample into a one (1) Liter volumetric flask and dilute to the mark with laboratory grade water.

Nutrients (Catalog #6020)

Sample Description

Individual vials are prepared separately. Do not combine vials into one sample.

The enclosed vials when properly diluted will result in two samples with known concentrations. Vial 1 contains Inorganic Nitrogen and Phosphorus compounds to be analyzed for Ammonia, Nitrate, and Orthophosphate. Vial 3 contains organic forms of Nitrogen and Phosphorus and may be analyzed for TKN Nitrogen and Total Phosphorus. The samples should not be filtered, but should be analyzed soon after dilution. Digestion is required for TKN and Total Phosphorus analysis. The enclosed samples when properly diluted will give concentrations in the ranges shown below:

	Range		Units
Ammonia Nitrogen as N	0.65	19	mg/L
Nitrate Nitrogen as N	0.25	40	mg/L
Orthophosphate as P	0.5	5.5	mg/L
Total Kjeldahl Nitrogen	1.5	35	mg/L
Total Phosphorus as P	0.5	10	mg/L

Instructions

- Record the Sample Lot Number _____
- Prepare separate samples by pipetting 10 ml of each vial to a one (1) liter volumetric flask and dilute to volume using laboratory grade water.
- For sample 1, dilute 10 ml of vial 1 to one (1) liter. Sample 1 will be tested for Ammonia, Nitrate, and Orthophosphate.
- For sample 2, dilute 10 ml of vial 3 to one (1) liter. Sample 2 will be tested for TKN and Total Phosphorus.

Oil & Grease (Catalog #6120)

Sample Description

The enclosed vial contains a known amount of Oil and Grease. This sample is designed to be analyzed by a gravimetric procedure. The Oil and Grease Sample is suitable for analysis using method 1664. The sample is prepared in a solvent matrix and should not be analyzed by IR. The enclosed vial when properly diluted will give a concentration in the range shown below:

	Range		Units
Oil & Grease	20	100	mg/L

Instructions

- Record the Sample Lot Number _____
- Add 500 ml of laboratory grade water and sufficient Hydrochloric Acid to ensure a pH of less than 2 (approximately 2 ml of concentrated acid) to a one (1) liter volumetric flask.
- Pipet 10 ml of the sample with a volumetric pipet to the same one (1) liter flask and dilute to the mark with laboratory grade water.

pH (Catalog #6060)

Sample Description

The enclosed sample will give a concentration in the range shown below:

	Range		Units
pH	5	10	units

Instructions

- Record the Sample Lot Number _____
- Sample is provided full volume. Do not dilute. Test sample as received.

Settleable Solids (Catalog #6230)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Settable Solids	5	100	mL/L

Instructions

- Record the Sample Lot Number _____
- Shake sample bottle vigorously for two (2) minutes.
- Pour the well-mixed sample into a 1 Liter Imhoff cone.
- Rinse the sample bottle with laboratory grade water and transfer to the Imhoff cone. Continue rinsing the sample bottle until the Imhoff cone is filled to the 1 Liter mark.

Solids (Catalog #6030)

Sample Description

The sample has been carefully prepared to contain an exact amount of both suspended and total dissolved solids. The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Total Suspended Solids	23	100	mg/L

Instructions

- Record the Sample Lot Number _____
- Solids should be analyzed immediately after preparation.
- Samples must be mixed vigorously before sampling for at least 30 seconds.
- It is recommended that subsampling be done with a graduated cylinder. The graduated cylinder should be rinsed at least 3 times with laboratory grade water.
- Gently tap the vial to ensure the solid material is not on the underside of the cap before opening.
- Carefully transfer the contents of the vial into a one (1) liter volumetric flask. Be certain to rinse both the cap and vial with multiple washings. To avoid “dusting” it is suggested that the contents of the vial be wetted before attempting transfer.
- Dilute the flask to volume with laboratory grade water.
- Although the vial contains Total Suspended Solids (TSS) AND Total Dissolved Solids (TDS), DMRQA Study 28 only requires Total Suspended Solids be reported. Please verify you have ONLY reported results for TSS.

Total Cyanide (Catalog #6090)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Total Cyanide	0.1	1	mg/L

Instructions

- Record the Sample Lot Number _____
- Add two grams of Sodium Hydroxide and 900 ml of laboratory grade water to a one (1) Liter volumetric flask.
- Pipet 10 ml of the sample into the same one (1) liter volumetric flask and dilute to the mark with laboratory grade water.
- Sample distillation is required.

Total Phenolics (Catalog #6080)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Total Phenolics (4-AAP)	0.06	5	mg/L

Instructions

- Record the Sample Lot Number _____
- Pipet 10 ml of the sample into a one (1) liter volumetric flask and dilute to the mark with laboratory grade water.

Total Residual Chlorine (Catalog #6100)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Total Residual Chlorine	0.5	3	mg/L

Instructions

- Record the Sample Lot Number _____
- Pipet 10 ml of the sample into a one (1) liter volumetric flask and dilute to the mark with laboratory grade water.
- The sample should be analyzed immediately after dilution.

Trace Metals (Catalog #6070)

Sample Description

Individual vials are prepared separately. Do not combine vials into one sample.

The enclosed vials when properly diluted will give a sample with concentrations in the ranges shown below:

	Range		Units		Range		Units
Aluminum	200	4000	µg/L	Lead	70	3000	µg/L
Antimony	95	900	µg/L	Manganese	70	4000	µg/L
Arsenic	70	900	µg/L	Mercury	2	30	µg/L
Barium	100	2500	µg/L	Molybdenum	60	600	µg/L
Beryllium	8	900	µg/L	Nickel	80	3000	µg/L
Cadmium	8	750	µg/L	Selenium	90	2000	µg/L
Chromium	17	1000	µg/L	Silver	26	600	µg/L
Cobalt	28	1000	µg/L	Thallium	60	900	µg/L
Copper	40	900	µg/L	Vanadium	55	2000	µg/L
Iron	200	4000	µg/L	Zinc	100	2000	µg/L

Instructions

- Record the Sample Lot Number _____

Sample #3 should be tested for Antimony and Molybdenum. All other metals listed in the table are contained in sample #1.

- Vial #1 - Pipet 1.5mL of reagent grade Nitric Acid and 10.0 mL of vial #1 into a one (1) Liter volumetric flask and dilute to the mark with laboratory grade water.
- Vial #3 - Pipet 10.0 mL of vial #3 into a one (1) Liter volumetric flask and dilute to the mark with laboratory grade water.

Turbidity (Catalog #6220)

Sample Description

The enclosed vial when properly diluted will result in a sample with a concentration in the range shown below:

	Range		Units
Turbidity	1	20	NTU

Instructions

- Record the Sample Lot Number _____
- Mix the vial well before dilution.
- Pipet 5.0 mL of sample into a one (1) Liter volumetric flask and dilute to the mark with laboratory grade water.

Please contact APG if you have any questions about DMRQA 28.

Phone 800.272.4442

Email ptsupport@apgqa.com

**Website www.APGQA.com
 www.DMRQA.com**

Fax 740.423.5588

**Address Analytical Products Group, Inc.
 2730 Washington Boulevard
 Belpre, Ohio 45714**