

Laboratory & Field Instruments: Sample Preparation

Sample Preparation

See Inside!

- **Lachat MICRO DIST**, EPA approved for reporting of cyanide in drinking water and wastewater!
See page 107.
 - **Xenosep Oil and Grease System**—EPA-approved method!
See page 108.
- ...and Much More!



Be Right™

DRB 200 Dry Thermostat Reactor

Sample Preparation

The simple solution for standard and special digestions.



- Easy-to-use and fast
- Safe to operate
- Accommodates a variety of test vials
- Optional dual block for simultaneous digestions

The Hach DRB 200 Dry Thermostat Reactor provides unique one-key operation. Programs for Hach procedures with digestion are preprogrammed into the instrument. And it's fast—the block heats from ambient to 150°C in less than 10 minutes. Safe to operate. The fully insulated heater block of the DRB 200 reactor prevents skin contact with the heater block. Temperature safeguards are provided to prevent overheating. And the reactor will emit an audible signal and automatically shutdown at the end of the run. Optional dual block for simultaneous digestions. Two heater blocks in the DRB 200 reactor give the operator independent control of two temperatures and durations. Use this option to run two programs at the same time.

DIGITAL REACTORS

Most versatile models support either 13mm* or 16mm Hach chemistry vials.

Prod. No.	Description
LTV082.53.30001	9 vials x 16mm + 2 vials x 20mm (single block) 115 Vac
LTV082.53.40001	15 vials x 16mm (single block) 115 Vac
LTV082.53.42001	21 vials x 16mm + 4 vials x 20mm (dual block) 115 Vac
LTV082.53.44001	15 vials x 16mm + 15 vials x 16mm (dual block) 115 Vac
LTV082.52.44001	15 vials x 16mm + 15 vials x 16mm (dual block) 230 Vac
LTV082.52.30001	9 vials x 16mm + 2 vials x 20mm (single block) 230 Vac
LTV082.52.42001	21 vials x 16mm + 4 vials x 20mm (dual block) 230 Vac
LTV082.52.40001	15 vials x 16mm (single block) 230 Vac

*Use reactor adapters to adapt 16mm vial wells to the 13mm TNTplus vials.

These DRB 200 reactors support only the 13mm diameter TNTplus vials.

DRB200-01	9 vials x 13mm + 2 vials x 20mm (single block) 115 Vac
DRB200-02	21 vials x 13mm + 4 vials x 20mm (dual block) 115 Vac
DRB200-03	15 vials x 13mm + 15 vials x 13mm (dual block) 115 Vac
DRB200-04	12 vials x 13mm + 8 vials x 20mm (dual block) 115 Vac
DRB200-05	9 vials x 13mm + 2 vials x 20mm (single block) 230 Vac
DRB200-06	21 vials x 13mm + 4 vials x 20mm (dual block) 230 Vac
DRB200-07	15 vials x 13mm + 15 vials x 13mm (dual block) 230 Vac
DRB200-08	12 vials x 13mm + 8 vials x 20mm (dual block) 230 Vac

REACTOR ADAPTERS

These aluminum tubes are inserted into the 16mm vial wells of existing reactors, to adapt them to the 13mm TNTplus vials. The adapters can be removed (once the heater block has cooled) if the customer needs to use 16mm vial chemistries.

2895805	Reactor Adapter, 16mm to 13mm, 5/pk
HHA155	Reducing Adapter for DRB200, 20 > 16 mm

Applications

	Temperature (°C)	Time (minutes)
COD	150	120
TOC	105	120
Metals, suspended and/or complexed (lead, cadmium, copper, iron, nickel, zinc)	100	60
Total Chromium	100	60
Total Nitrogen	100/105*	60/30
Total Phosphate	100/105*	60/30
User-specific programs	37 to 165	1 to 480

*Digestion temperature and time depend on test method and reagents selected.

Specifications*

Programmable Temperature Range 37 to 165°C (99 to 329°F)	Power Requirements 100 to 240 Vac, 50/60 Hz, 600 VA
Operating Temperature 10 to 45 °C (50 to 113°F)	Compliance CE, GS, cTUVus
Programmable Timer Range 0 to 480 minutes	Dimensions 25.0 x 14.5 x 31.0 cm (9.8 x 5.7 x 12.2 in.)
Heating Rate 20 to 150°C in 10 minutes	Weight Single block: 2 kg (4.4 lbs.) Dual block: 2.8 kg (6.2 lbs.)
Temperature Stability ±2°C	Warranty Two-year
Stored Programs	
COD 150°C 120 minutes	
TOC 105°C 120 minutes	
Fixed 100, 105, 30, 60, 150, 165°C 120 minutes	

*Subject to change without notice.



Digesdahl® Digestion Apparatus

Cut digestion time to 10 minutes!

- Accurate, reliable, fast results*
- Eliminates metal catalysts
- Very low reagent use
- No fume hood required

Cut digestion time to 10 minutes with the patented Digesdahl Digestion Apparatus. Use the Digesdahl to determine Kjeldahl nitrogen (crude protein), phosphorus, calcium, potassium, iron, copper, silver, aluminum, nickel, cobalt, magnesium, manganese, lead, zinc, cadmium, and chromium in a variety of solid and liquid samples.

The system uses sulfuric acid and hydrogen peroxide to rapidly digest organic materials. Quantitative dilution directly in the digestion flask allows fast preparation for analyses by photometric or other methods.

A water aspirator purges reaction products, so digestions can be safely completed behind the optional safety shield without the need for a fume hood.

**Digesdahl digestion methods are not approved for EPA reporting purposes.*



Sample Preparation

Each Digesdahl unit includes two digestion flasks, a fractionating column and capillary funnel, an aspirator, finger cots, safety glasses, and assembly instructions.

Prod. No.	Description
2313020	Digesdahl Digestion Apparatus 115 Vac, 50/60 Hz
2313021	Digesdahl Digestion Apparatus 230 Vac, 50/60 Hz
5004000	Safety Shield
2220038	Hydrogen Peroxide Pour-out Dispenser, with flask, dispenses 10 mL

STANDARDS

2277924	Ammonium p-Toluenesulfonate, 7.402% N, 25 g.
2278024	Glycine p-Toluenesulfonate, 5.665% N, 25 g.
2278124	Nicotinic Acid p-Toluenesulfonate, 4.743% N, 25 g.
2277800	Nitrogen Primary Standard Set, for checking accuracy of crude protein test (TKN), contains one bottle of each of the above standards and an instruction booklet.

REAGENTS

97949	Sulfuric Acid, ACS, 500 mL
2119649	Hydrogen Peroxide, 50%, 490 mL
2495300	Reagent Set for Colorimetric TKN Determination

Specifications*

Power Requirements

115 or 230 Vac, 50/60 Hz, 250 watts

Control

Variable from 25-250 watts

Construction

Corrosion-resistant, epoxy-painted metal with composition heater base

Dimensions

14 x 16.5 x 33.6 cm (5.5 x 6.5 x 13.25") Requires total height clearance of approximately 50 cm (20") when assembled

Net Weight

3.85 kg (8.5 lb)

Shipping Weight

4.8 kg (10.6 lb)

**Subject to change without notice.*

Find it here... Buy it today on www.hach.com
U.S. customers only.



Distillation Apparatus

Fast set-up for sample pretreatment.

General Purpose Assembly



- Distillation sets include everything you need to satisfy EPA distillation requirements
- Easy to set up because you only receive the parts you need
- Illustrated, step-by-step procedures simplify distillation

General Purpose Distillation Apparatus Set

Adapts to a variety of test needs including all wastewater and water methods requiring sample pretreatment by distillation. Applications include fluoride, ammonia-nitrogen, phenols, selenium, volatile acids, and albuminoid nitrogen. Heating apparatus, sold separately, is needed for distillation.

Arsenic Distillation Apparatus Set

Used together with the General Purpose Distillation Set (Prod. No. 2265300) when arsenic is to be determined. Heating apparatus (not included) is also required.

Cyanide Distillation Apparatus Set

Used together with the General Purpose Distillation Set (Prod. No. 2265300) when cyanide is to be determined. Heating apparatus (not included) is also required.

Heater and Support Apparatus

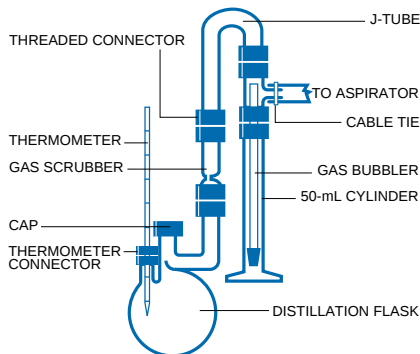
For use with Hach Distillation Glassware Sets. Includes Rotamantle Heater, clamps, clamp holders, and support rod.

Laboratory Platform Jack

Loading platform, 15 x 15 cm (6 x 6"). Lifts 15 kg (33 lb) to a 28 cm (11") height maximum.

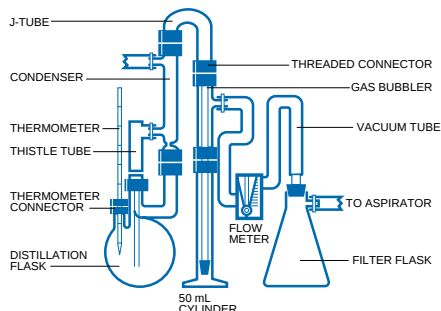
Arsenic Assembly, Complete

(shown with required General Purpose Set)



Cyanide Assembly, Complete

(shown with required General Purpose Set)



Prod. No.	Description
2265300	General Purpose Distillation Apparatus Set (Heater and support apparatus also required)
2265400	Arsenic Set (General Purpose Set and Heater and Support Apparatus also required)
2265800	Cyanide Set (General Purpose Set and Heater and Support Apparatus also required)

ACCESSORIES/REPLACEMENT PARTS

2264806	Connector (20-400 to 20-400), J-tube, 6/pk
2274000	Connector (13-425), Thermometer
2274106	Connector (24-400 to 24-400), Cylinder, 6/pk
2265308	Distillation Procedures Manual
2274400	Heater and Support Apparatus 115 Vac, 60 Hz
2274402	Heater and Support Apparatus, 230 Vac, 50 Hz
2274300	Laboratory Platform Jack
2095926	Thermometer, mercury -10 to 260°C (20 to 500°F)

See page 342 for individual replacement parts.

A revolution in distillation technology.

With the MICRO DIST system from Lachat Instruments, you can now distill up to 21 samples for cyanides, sulfide and ammonia in 30 minutes; and phenolics and tritium in 90 minutes. MICRO DIST eliminates the need for bulky, expensive, clumsy and time-consuming glassware-based distillation units while accommodating liquid and solid samples.

See page 102 for ordering information.

Specifications*

Dimensions (W x D x H)

72 x 17 x 33 cm (28 x 7 x 13 in.)

Electrical

110–120 Vac, 11A; 220–240 Vac, 5A

**Subject to change without notice.*



Sample Preparation

For Saving Time, Money, and Reducing Complexity, MICRO DIST Outshines Other Techniques

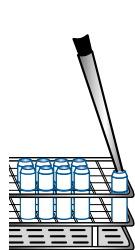
Time Comparisons

	MICRO DIST	MIDI	MACRO
Setup Time (min.)	15 (21 samples)	80 (10 samples)	240 (10 samples)
Warm-up Time (min.)	15	15	60
Distillation Time (min.)	30 (21 samples)	60 (10 samples)	60 (10 samples)
Cool-down Time (min.)	0	15	30
Clean-up & tear-down time (min.)	5	60	60
Total (min.)	65	230	450

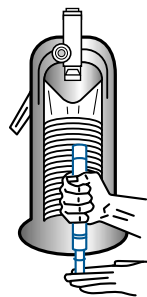
Other Benefits

	MICRO DIST	MIDI	MACRO
Fume hood required	No	Yes	Yes
Bench area needed (sq. in.)	24 (21 samples)	120 (10 samples)	144 (5 samples)
Breakable ground-glassware	No	Yes	Yes
Sample volume required (mL)	6	50	500
Sample waste volume after distillation (mL)	4	~48	~480
Purge cylinder gas required	No	Yes	Yes
Running cooling water required	No	Yes	Yes

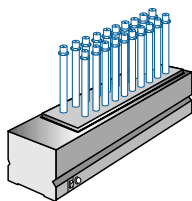
MICRO DIST Makes Distillation Easy!



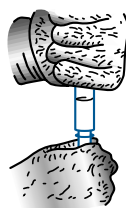
1. Place 6 mL of sample into the Sample Tube.



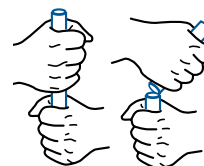
2. Attach the Sample Tube to the Collector Tube.



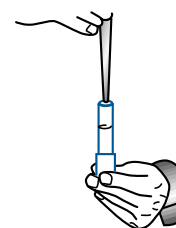
3. Place the tube assembly into the heating block and heat the samples for 30 minutes.



4. Remove each tube from the block and disconnect the Sample Tube from the Collector Tube.



5. Snap the Collector Tube in half.



6. Bring the Distillate in the Collector Tube up to volume with DI water.

Xenosep® Oil and Grease Systems

Sample Preparation

At last, an easy, EPA-approved method for oil and grease!



Lab Stand and Clamp sold separately.

Xenosep Solid-Phase Extraction (SPE) Systems offer the easiest and most cost effective way to test for Oil and Grease using EPA Method 1664A. Fast, in-house results enable you to maintain control over your plant discharges in real time without the complications of the hexane LLE procedure. Xenosep SPE filters feature a unique triple layer that prevents premature clogging and flows 10 times faster than typical SPE filters.

It is now possible to easily achieve reliable, consistent Oil and Grease results and decrease your sample turnaround time. A free training video on CD is included with each Starter Kit to show your lab how to perform EPA Method 1664A by SPE. For more information on Xenosep SPE Systems, visit our website at www.hach.com/xenosep.

Xenosep SPE Systems are available in convenient kits which include the components for 24 tests and all the glassware required to process them, one at a time. Replacement components are also available.

<u>Prod. No.</u>	<u>Description</u>
------------------	--------------------

2943231	Xenosep SPE Starter Kit without Solvent Recovery
----------------	--

SELECT REPLACEMENT COMPONENTS (others available upon request)

2943800	Xenomax™ SPE Consumables Kit (includes 24 SPE Filters, Pipets, and Sodium Sulfate Columns)
2943300	SPE Filters, 1664A, 47 mm, 48/pk
2943400	Pipets, Transfer, Polyethylene, 15 mL, 48/pk
2943500	Inline Column with Sodium Sulfate, 10g, 48/pk
2943600	Glass Wool Fibers 50 g
2943701	EPA 1664A Standard, 1x30 mL, 4mg/mL
2943702	EPA 1664A Standard, 1x10 mL, 4mg/mL
2943226	Aluminum Pans, 105 mm, 100/pk
2943227	Hi-Loft GFM Prefilters, 42 mm, 48/pk

Need multiple sample processing capability or to recover the solvent?



Manifold sold separately.

Xenosep Manifold Kits are available for a three position manifold and include components necessary to process three samples at a time.

<u>Prod. No.</u>	<u>Description</u>
------------------	--------------------

2943232	3 Place Manifold Kit, Glassware
2946707	3 Place Manifold, Stainless Steel



Lab Stand and Clamp sold separately.

Xenosep Starter Kit with solvent recovery is the same as above except it includes a distillation assembly and a total of 7 flat-sided boiling flasks.

<u>Prod. No.</u>	<u>Description</u>
------------------	--------------------

2943200	Starter Kit with Solvent Recovery
----------------	-----------------------------------