

Labconco Kjeldahl Distillation and Digestion Apparatuses

- Do your own TKN for faster results
- Compact designs fit in an acid fume hood

Are you sending your TKN (Total Kjeldahl nitrogen) samples out for analysis? Performing TKN in your lab can give you faster results for a lower cost, with more control over data quality. Labconco has been making high-quality Kjeldahl determination apparatuses since 1925. Two systems are available: Macro Classical Units and Macro Rapid Units. **For both system types, you must order a digestion unit, distillation unit and all required accessories.**

Macro Classical Systems

- Use to determine nitrogen in lower concentration samples

Use Macro Classical digestion and distillation units together for determination of nitrogen in lower concentration samples. This system uses two 500- or 800-mL Kjeldahl flasks to process up to a 100-mL wastewater sample (or 5-g dry sample) in each flask.

The **digestion unit** features a chemically-resistant CPVC fume manifold with PTFE nipples that draw chemical fumes from the digestion flasks. The two independently controlled digestion heaters that cradle the Kjeldahl flasks offer fine-tune heating capacity control from 20 to 100%. Flasks are oriented at a 45° angle to promote the condensation and refluxing of the acid fumes back down into the digestion flask—prevents the samples from boiling dry during the digestion process. Digestion heaters are located in a drip shield with a drain tube, which captures and drains accidental acid spills to an acid-resistant container. Digestion units feature a sturdy welded epoxy-coated steel frame.

The 2-place **distillation unit** features connecting bulbs that prevent carryover of NaOH, a water-cooled condensation manifold and adjustable heating mantles that accommodate different sizes of Kjeldahl flasks. Its sturdy stainless steel condensate tubes are chemical resistant. The unit is shipped fully assembled. To use, simply plug in and attach tap water to the condenser manifold.

Accessories: Order Kjeldahl flasks separately. Classical two-place digestion apparatuses require a lab faucet vacuum aspirator and $\frac{3}{8}$ " ID tubing. The water connection for the Classical distillation manifold is $\frac{3}{4}$ " NPT(M). See the Lab Chemicals section for required reagents.

Choose from two systems to meet your needs: Classical or Rapid



Classical Digestion Unit
74048



Classical Distillation Unit 74049

Macro Rapid Systems

- Use to determine nitrogen in higher concentration samples

Use Macro Rapid digestion and distillation units together for determination of nitrogen in higher concentration samples. This system uses 250-mL tubes to process 15- to 25-mL wastewater samples (or 1-g dry sample) in each tube.

The **Rapid Digestor** comes in 4- or 25-place units. Each tube has its own ceramic block heater for efficient, uniform heating. A platinum RTD sensor detects internal temperature to ensure consistent temperature control from ambient to 450°C. The 25-place model also features a convenient carrier rack with heat shields that holds glassware in place for easy handling, loading and washing.

The **RapidStill II** distillation apparatus uses fast steam distillation for macro concentrations of nitrogen. Setup is easy: just plug the unit in, connect lab water to inlet and insert tubing into the peristaltic pump to dispense user-provided NaOH. Typical distillation times range from 5 to 10 minutes. A safety door surrounds the digestion tube, protecting the operator from digestion tube breakage. Inlet tubes for steam and NaOH are made of chemically inert PTFE for long life. This unit includes the tubing required for water connection. The compact design conveniently fits on a lab bench.

Accessories: Order digestion tubes separately. The 4-place Rapid digestor's fume removal system requires a lab faucet vacuum aspirator and $\frac{3}{8}$ " ID tubing.

SAFETY NOTE: Digestion systems use high temperatures with acid and produce acid gases. Distillation systems produce excess heat and involve boiling concentrated NaOH. They should be used inside an appropriate fume hood or with a fume removal system and safety shield. Always wear appropriate eye protection, hand protection and clothing (full face shield and full neoprene apron).



RapidStill II 74054



Rapid Digestor,
25-Place 74050



Optional Fume Removal
System for Rapid
Digestors 74055



Macro Classical Apparatus Dimensions

74048: 10³/₈"W x 16³/₄"H x 18¹/₄"D

74049: 10³/₈"W x 30¹/₈"H x 18¹/₄"D

Macro Rapid Apparatus Dimensions

74050: 19¹/₄"W x 20¹/₂"H x 19"D (Digestion Block w/ Tubes);
8¹/₈"D x 5⁵/₈"H x 12"D (Controller)

74051: 9"W x 17¹/₂"H x 11¹/₄"D (Digestion Block w/ Tubes);
6³/₄"W x 5¹/₄"H x 8¹/₈"D (Controller)

74054: 18"W x 29³/₄"H x 12³/₄"D

74055: 15³/₄"W x 3"H x 18¹/₂"D

74056: 5³/₈"W x 2¹/₄"H x 4³/₄"D

Macro Classical Kjeldahl Digestion & Distillation Apparatuses

MFR #	DESCRIPTION	STOCK #	EACH
DIGESTION & DISTILLATION APPARATUSES			
2128401	Two-Place Digestion Apparatus 115V, 50/60 Hz (use with Aspirator Vacuum Pump)	74048	\$
2128501	Two-Place Distillation Apparatus 115V, 50/60 Hz	74049	
ACCESSORIES			
—	500-mL Kjeldahl Flasks, Pack of 6	73708	\$
—	800-mL Kjeldahl Flasks, Pack of 6	73709	
2081300	Replacement Connecting Bulbs, Pack of 6	74057	
2128800	Replacement Delivery Tubes, Pack of 6	74058	

Macro Rapid Kjeldahl Digestion & Distillation Apparatuses

MFR #	DESCRIPTION	STOCK #	EACH
DIGESTION & DISTILLATION APPARATUSES			
2301200	Rapid Digestor, 25-Place, 208/230V, 50/60 Hz	74050	\$
2308000	Rapid Digestor, 4-Place, 115V, 50/60 Hz	74051	
6520000	RapidStill II, 115V, 60 Hz	74054	
ACCESSORIES			
2304005	Digestion Tubes, 250 mL, Glass, Pack of 5	74063	\$
2304025	Digestion Tubes, 250 mL, Glass, Pack of 25	74064	
2350025	Fume Removal System, 25-Place, Rapid Digestors	74055	
2354000	Fume Removal System, 4-Place, Rapid Digestors (use with Aspirator Vacuum Pump)	74056	

Accessories for All Units

DESCRIPTION	STOCK #	EACH
Hengar Boiling Granules, Plain, 250 g	202776	\$
Bel-Art Laboratory Faucet Aspirator Vacuum Pump	73618	
Flexible PVC Tubing, 1/2"OD x 3/8"ID, 25'L Roll	17198	
HDPE Tubing, 3/8"OD x 1/4" ID, 25 ft	17201	

The Kjeldahl Method

The Kjeldahl method is used to determine the nitrogen content of organic and inorganic substances. There are three steps to the method:

- 1. Digestion:** Boil the sample in concentrated sulfuric acid to decompose nitrogen in organic samples. Ammonium sulfate solution is the end result.
- 2. Distillation:** Next, concentrated sodium hydroxide is added to the digested sample. The NH₄ in the sample is converted to NH₃. This solution is boiled, and the condensation of the NH₃ goes into a receiving solution.
- 3. Final Ammonia Measurement:** The final nitrogen content is determined via titration, ISE or the Phenate method.

operator
notes



LaMotte Total Nitrogen Digestion Tubes

- Rapid, accurate and easy to use
- Ideal for monitoring drinking water
- 0 to 25 mg/L total nitrogen



LaMotte offers an easy-to-use total nitrogen method (chromotropic acid with persulfate digestion). Simply prepare sample, digest in a heater-block reactor, and read results using a Smart3 colorimeter or a spectrophotometer. Test range is 0 to 25 mg/L total nitrogen.

Includes: 25 reaction tubes and instructions.

DESCRIPTION	STOCK #	EACH
Total Nitrogen Digestion Tubes, 25 Tests	33295	\$
LaMotte Smart3 Colorimeter	27744	

USABlueBook BRAND PRODUCTS

YOUR
BEST
VALUE!



NEW!

USABlueBook Kjeldahl Reagents

- Ready-to-use reagents for Kjeldahl nitrogen testing

USABlueBook Kjeldahl reagents are manufactured to meet *Standard Methods* APHA 4500-N_{org}.B requirements. Choose your distillation reagent based on how you will be performing your final ammonia determination. For titration, use indicating boric acid. For phenate or ion selective electrode, use 0.04 N H₂SO₄.



DESCRIPTION	STOCK #	EACH
AMMONIA REMOVAL REAGENTS		
Borate Buffer Solution, 500 mL	29484	\$
Sodium Hydroxide, 6.0 N, 500 mL	87810	
DIGESTION REAGENTS		
Digestion Reagent, 500 mL	87767	\$
Sodium Hydroxide-Thiosulfate Reagent, 500 mL	87808	
DISTILLATION REAGENTS		
Boric Acid Solution w/Mixed Indicator, 1 L	29489	\$
Sulfuric Acid, 0.04 N, 500 mL	29851	