

CEM Acid Distillation System



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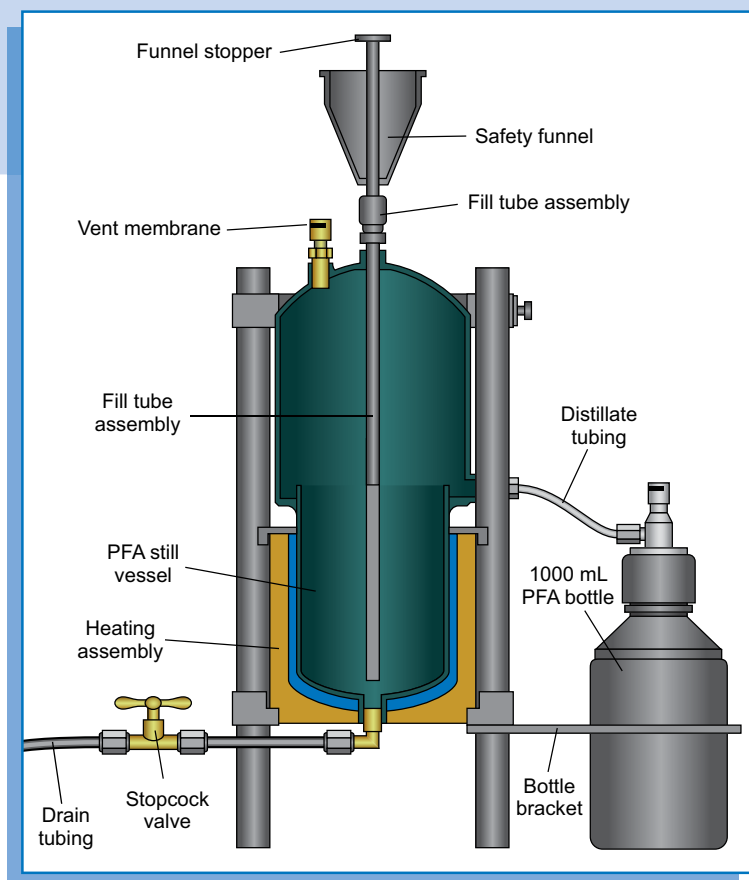
Make your own ultrapure acids or water for critical analytical applications, reduce background analyte interference, and save money. Easy-to-use right out of the box, the CEM Acid Distillation System is a sub-boiling distillation system for laboratory production of ultrapure acids or water for your most demanding analytical applications. The high purity fluoropolymer construction of the Acid Distillation System allows for the distillation of all the acids most commonly used in sample preparation and analysis via ICP-OES and ICP-MS, including HF. The Acid Distillation System includes an integrated heating source, separate heating control unit, solid stand, all necessary fittings, safety bottle bracket, a GL-45 transfer closure, and (2) 1000-mL PFA bottles.



Features & Benefits

- Easy to Use
- Wetted parts of molded PFA
- Designed for use with HF, HCl, HNO₃ and H₂O
- Compact design
- Large volume capacity
- Built-in heater
- Maximum heating temperature of 90 °C
- No cooling water required
- Waste drain for easy cleaning

The Acid Distillation System is safe, easy to use, and ready to operate right out of the box. The compact unit will fit neatly and efficiently within most existing laboratory fume hoods. The heating mantle that surrounds the reservoir gently heats the contents without the use of lamps or other external heating devices. The unique design of the Acid Distillation System requires no cooling water, which not only allows greater flexibility in operation, but also promotes conservation efforts within the laboratory. The convenient, built-in waste drain removes waste acid easily and efficiently, and does not require the use of a pump. The temperature control unit is housed in a sturdy plastic case and has variable temperature settings for controlling the distillation rate according to your specific schedule and purity demands.



COST SAVINGS

The CEM Acid Distillation System will pay for itself in a short period of time. Consider the following:

- Reagent grade nitric acid is ~ \$0.02/mL
- High purity grade nitric acid is ~ \$0.05/mL
- Ultrahigh purity grade nitric acid is ~ \$0.55/mL

If 2000 mL of high purity grade nitric acid at a cost of \$100 is distilled to make 1400 mL of ultra-high purity nitric acid with a value of \$770, the savings will be \$670. If this is done once a week, the cost of CEM's Acid Distillation System will be recovered in less than 11 weeks!

HF ACID PURITY COMPARISON: Distillation vs. Commercial Brand*

Analyte	Detection Limit (ppt)	Commercial High Purity Acid Comparison	Starting Acid	1 st Distilled Batch	5 th Distilled Batch	15 th Distilled Batch
Li	1	< 1	< 1	< 1	< 1	< 1
Na	1	< 1	205	49	14	6
Mg	1	2	27	5	1	< 1
Al	1	8	113	205	15	6
K	1	3	35	45	5	3
Ca	1	9	39	78	7	2
Cr	1	1	41	10	1	3
Fe	1	1	120	312	7	9
Ni	1	< 1	65	7	< 1	1
Cu	1	< 1	43	9	< 1	2
Zn	1	2	19	5	1	3
W	1	< 1	21	7	5	2
Mo	1	1	2	6	4	1
Ti	1	3	67	16	6	6
Co	1	< 1	21	1	< 1	< 1
Mn	1	< 1	6	1	< 1	< 1
Zr	1	< 1	2	3	< 1	< 1
Ag	1	< 1	< 1	< 1	< 1	< 1
Cd	1	< 1	< 1	< 1	< 1	< 1
Sn	1	< 1	2	1	1	< 1
Cs	1	< 1	< 1	< 1	< 1	< 1
Ba	1	< 1	4	< 1	< 1	< 1
Pb	1	< 1	1	< 1	< 1	< 1

DISTILLATION RATES

Analyte	High	Mid	Low
HNO ₃	40 mL/hr	25 mL/hr	5 mL/hr
HCL	40 mL/hr	25 mL/hr	10 mL/hr
HF	40 mL/hr	25 mL/hr	10 mL/hr
H ₂ O	50 mL/hr	35 mL/hr	10 mL/hr

*Comparison Notes:

- 15 separate distillations were performed with analytical grade HF acid (ppb level).
- Each batch represents a full liter of acid that was distilled on the highest temperature setting.
- The distilled acid was analyzed after the 1st, 5th & 15th batches for trace metals, and compared against commercially available ultrahigh purity acid.

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SPECIFICATIONS

Power Source <i>(three-wire earth grounded only)</i>	115 VAC, 50/60 Hz
Power	70 Watts [<i>resistance heater</i>]
Shipping Weight	16 lbs. (7.25 kilograms)
Dimensions	
Still with bottle bracket	14.25 in. x 8 in. [<i>L x W</i>] (36.5 cm x 20 cm)
Height w/ funnel & stopper	23 in. (59.0 cm)
Power cord	10 ft. [<i>still to control unit</i>] (3 meters) 6.5 ft. [<i>control unit to grounded outlet</i>] (2 meters)
Installed Location	Distillation unit within chemical fume hood
Evaporator Capacity	1000 mL

ORDERING INFORMATION

Part Number: 901075

Kit contains: (1) 165515 1000 mL Bottle
(1) 165505 Replacement Membrane
(1) 900-001-165500 Distiller