



Make Ultrapure Acids Through Clean Chemistry

Reduce background analyte interference, and save money by making your own ultrapure acids (or water) for critical analytical applications. Designed for use with HF, HCl, HNO₃, and H₂O, the sub-boiling acid distillation system requires no cooling water and has a built-in waste drain for easy cleaning, without the use of a pump. This system is safe, easy-to-use, and its compact design allows it to fit neatly in a fume hood.

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



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The CEM Acid Distillation system pays for itself.

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 3 months.

- Reagent grade nitric acid = \$0.02 per mL
- High purity nitric acid = \$0.05 per mL
- Ultra high purity nitric acid = \$0.55 per mL

HF acid purity comparison: Distillation vs. Commercial Brand*

Analyte	Detection Limit (ppt)	Commercial High-Purity Acid Comparison	Starting Acid	1st Distilled Batch	5th Distilled Batch	15th 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

***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, and 15th batches for trace metals and compared against commercially available ultrahigh purity acid.