



OmniPure

Sub-Boiling Distillation System

The OmniPure allows on-demand production of high purity inorganic acids (e.g. HNO₃, HCl, HF) from less expensive reagent grade materials. Cost savings can be significant compared with purchase of commercial high purity acids.

The OmniPure is a fully automated unit with all wetted parts composed of inert, high-purity PFA and FEP. The distillation assembly consists of a directly heated distillation container and an air-cooled condensation bottle. No external cooling system is required.

Experimental

A 500 mL aliquot of spiked (10µg/L) 37% reagent grade HCl was added to the distillation container. Heat was applied at 90°C for 12 hours and distillate collected in a clean PFA bottle. The spiked acid and distillate were then analyzed by ICP MS.

Throughput: 37% HCl, 12 hours

| Temp (°C) | Volume (mL) |
|-----------|-------------|
| 60 | 130 |
| 70 | 190 |
| 80 | 245 |
| 90 | 320 |

Reagent Grade HCl

| Element | Spike Concentration (µg/L) | After 90°C Distillation (µg/L) |
|---------|----------------------------|--------------------------------|
| Be | 10.1 | ND |
| Mg | 9.6 | 0.13 |
| Al | 11.6 | 0.97 |
| Co | 9.9 | 0.003 |
| Ni | 11.5 | ND |
| Cu | 10.0 | 0.23 |
| Sr | 10.5 | 0.22 |
| Ru | 10.8 | 0.02 |
| Rh | 10.0 | 0.005 |
| Pd | 9.9 | 0.01 |
| Cd | 10.2 | 0.09 |
| Ba | 10.1 | 0.08 |
| Dy | 10.1 | ND |
| Ir | 10.6 | 0.008 |
| Pt | 10.2 | ND |
| Au | 10.2 | 0.04 |
| Tl | 10.2 | 0.04 |
| Pb | 10.6 | 0.007 |
| U | 10.3 | ND |

ND = Not detected

