

Cupola Distillation

Distillation device for highly effective Subboiling-Distillation up to 220°C

The apparatus is particularly suited for the production of ultra-pure water and acids.

The device consists of:

- the distillation vessel with 2000 ml capacity,
- the condensation cupola with connections for cooling water and the outlet for the condensate
- a heating jacket
- the condensate collecting vessel.
-

All surfaces of the apparatus coming in contact with acids consist of highly pure PTFE, TFM or PFA. All outer surfaces which may come in contact with acids are also made of PTFE, TFM or PFA or of an AlMg-alloy coated with PFA.

For safety reasons the still should be combined with the **PicoTrace** hotplate SFH 2820N and the **PicoTrace** Time-Temperature-controller TR 1040.

Mode of operation:

The temperature during subboiling distillation lies way below the boiling point of the liquid to be distilled. This avoids the formation of bubbles and the contamination of the vapor volume by aerosols. Consequently, the process of distillation, especially with liquids having a high boiling point, is very slow. A subboiling distillation device should therefore be constructed so as to operate with a high degree of effectiveness and to yield lowest blank samples.

In the cupola distillation apparatus, the area of condensation is directly opposite to the liquid area. It is larger than the area of the liquid surface. This influences the pressure gradient in the vapor volume towards the condensation area very effectively. Reflux is reduced and, compared to traditional subboiling apparatus, the yield of the condensate is greatly enhanced.

Advantages of the Cupola Distillation Device:

- High efficiency: 500 ml of water, HCl, HF, HNO₃ at 60 °C within 24 hours.
- Extremely low blanks: Less than 5 picogram/g in water in only one subboiling step.
- Working temperatures up to 220°C.
- Suitable for HClO₄ and H₂SO₄.
- The device can be run continuously.
- The distillation residue can be removed through a separate tubing.
- The temperature of distillation can be measured.
- Two devices can be connected to form a cascade, thus continuous double-subboiling distillation is possible.

Technical data:

Work space required: 70 x 55 cm

Height of the device (including hotplate): 50 cm

Capacity: 2000 ml

Weight (without hotplate): 11 kg

Public utilities required: cooling water

current for the hotplate (see hotplate specification)