



## DST-4000 Acid Purification System

The Savillex DST-4000 Acid Purification System is used to purify acids used in trace metals analysis by the process of sub-boiling distillation. The DST-4000 is a fully automated, high throughput unit that is simple to use and safe to operate unattended in a fume hood. It can purify up to 4 L of acid at a time, converting trace metal (1 ppb) grade to high purity (10 ppt) grade, and provides a significant cost savings to any trace metals lab. The DST-4000 can be used to purify HNO<sub>3</sub>, HCl and HF, producing 1 L of high purity acid in approximately 12 hours. For lower throughput labs, a smaller version (DST-1000) is also available.

### Design Features

The DST-4000 features a PFA reservoir/condenser vessel with the lower (reservoir) section surrounded by an electric heating mantle. All wetted parts are high purity PFA. Acid to be purified is added to the vessel via a conveniently located front fill tube which fills the reservoir from the bottom. The acid level in the reservoir is displayed by the liquid level gauge on the fill tube. Power is supplied to the heating mantle by a variable temperature controller with a digital display. Distillation temperature is user adjustable between 40°C (104°F) and 90°C (194°F). When the acid in the reservoir is heated, high purity acid vapor is generated. The acid vapor condenses on the walls of the upper part of the vessel (condenser) and is collected in a channel which drains into (2) 2000 mL Purillex™ PFA collection bottles. The domed shape of the condenser allows for efficient air cooling and acid vapor condensation. No water cooling is needed, which greatly simplifies installation and also reduces waste. The vent assembly in the vessel and the vents in the bottle transfer closures allow air into the vessel as the acid is distilled, and allow displaced air out of the bottles as they fill. All vents are fitted with PTFE membranes, which prevent airborne contamination from entering the system. The pressure equalization tube maintains even pressure throughout the system during the distillation process to prevent pressurization.

The production rate of high purity acid is dependent on the temperature setting used. A temperature setting of 90°C (194°F) will produce acid at approximately 85 mL/hr. The temperature setting only affects the production rate and not the purity of the acid. The maximum acid temperature that can be generated by the heating element is well below the boiling point of the acid so there is no potential for contaminants to be carried over with the distillate. The low maximum temperature and integrated thermal fuse in the heating element also provides a high degree of safety during the distillation process. The DST-4000 features an acid level sensor with auto shutoff which switches off the heater when the distillation is complete, for true walk-away operation. The process can also be stopped at any time if high purity acid is needed urgently. After cooling, the residual acid is drained to waste.

The DST-4000 is extremely simple to install and with a footprint of only 50 cm x 30 cm and a height of 55 cm. The DST-4000 will fit into the smallest fume hoods. The controller is connected via a 3 m cord and is designed to be placed outside the fume hood.

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Savillex Data Sheet

## System Components

The DST-4000 Acid Purification System comes complete with controller, (2) 2000 mL Purillex PFA collection bottles and a bottle bracket.

## Specifications

Feature	Specification
Power Source (three-wire earth grounded only)	120 or 230 VAC +/- 10%, 50/60 Hz
Power Supply	155 watt resistance heater
Power Cord Length	3 m (9.8 ft) DST-4000 unit to control unit 2 m (6.6 ft) control unit to outlet
Dimensions (footprint)	Length: 50.0 cm (19.7 in) Width: 30.0 cm (11.8 in) Height: 55.0 cm (21.7 in)
Shipping Weight	12 kg (26.5 lbs)
Capacity	4000 mL
Acids That Can Be Purified by the DST-4000	HNO <sub>3</sub> , HCl and HF
Certification	CE certified and RoHS compliant

## Ordering Information

Description	Part #
DST-4000 120 VAC	525-4000-120
DST-4000 230 VAC	525-4000-230
DST-4000 230 VAC (UK 3-pin fused plug)	525-4000-230UK

### Optional Part

Polypropylene Spill Tray, 18" x 26" x 1"	730-4525
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