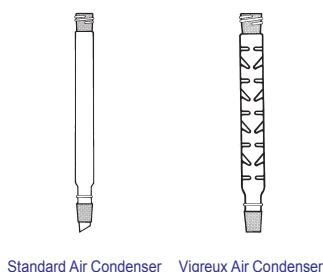


Replaces the need for water-cooled condensers in over 95% of all common chemistry applications

Limitations of an Air Condenser?

Standard air condensers (see images) are readily available for laboratory use. Generally they are not considered the preferred choice for laboratory applications because of the lack of efficiency when compared to a water condenser and because they only work for a limited range of solvents and volumes. For most applications a water condenser is preferred because of its greater efficiency and use over a wider range of applications.

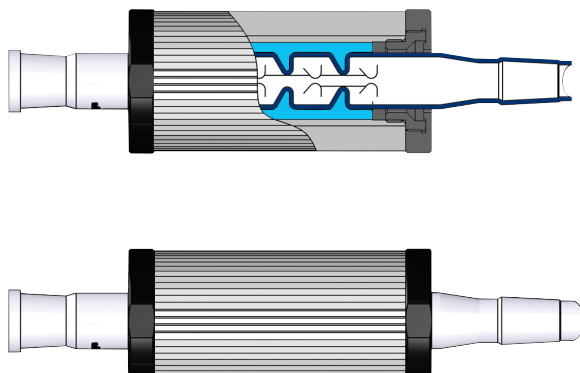
Radleys Findenser™ is a new SUPER air condenser that does work with a wide range of solvents, with flask sizes of up to 2L, (solvent volume of 1L) and has the efficiency of a water condenser. Findenser replaces water-cooled condensers in over 95% of common chemistry applications and requires no running water to operate.



Standard Air Condenser Vigreux Air Condenser

Why is Findenser so much better?

- Findenser comprises of an internal glass condenser and an external, finned aluminium jacket, between which a small amount of water is permanently sealed.
- The glass condenser design has a greater internal surface area than traditional condensers, increasing heat transfer capacity.
- The finned jacket fits around the glass condenser, further increasing the external surface area.
- The result is a 'SUPER air condenser' that performs as well as a traditional water condenser.



Test data to back this up

Three identical sets of apparatus were set up side by side in a fume cupboard, each consisting of a hotplate/stirrer, 1L Heat-On heating block and 1L round bottom flask containing 500ml of DCM (b.pt. 40°C). 1 flask was fitted with a Vigreux condenser (420mm length), one with Findenser and the third with a water condenser (300mm length). The heating blocks were heated at a controlled measured temperature above the boiling point of the solvent to generate reflux conditions for 16 hours.

Amount of solvent lost was determined by the weight differential of the solvent from start to finish (8 hours).

The experiment was repeated at 3 different block temperatures.

DCM 500ml in 1L flask, 16h, different block temperature

	Block temperature (°C)	Water condenser	Findenser	Vigreux condenser
DCM	50	0.9	0.6	2.0
DCM	55	1.2	1.8	3.9
DCM	60	1.8	2.5	95.0

Table shows percentage solvent loss after 16h

Conclusions

- In all cases, the higher the temperature of the block, the more solvent loss occurred.
- With both the water condenser and Findenser, the losses remain acceptable even with block temperatures 20°C above the boiling point of the solvent.
- With the Vigreux condenser high losses of solvent occurred with block temperatures 20°C above the boiling point of the solvent.

Findenser requires no running water to operate

Technical specifications

	Findenser
Compatible flask sizes	10ml to 2L flasks
Working volume range	Up to 1L of solvent in a 2L flask
Surface area	Standard Findenser has 9,000 cm ²
Solvent BP range	35°C to 155°C
Neck sizes	B14, B19, B24 & B29
Length	275mm to 400mm

Prior to the introduction of Findenser the only option for low boiling point solvents like Acetone, DCM and Diethyl ether was to use expensive and wasteful water-cooled condensers

		Traditional condenser suitability when heating at 20°C above boiling point					Findenser suitability when heating at 20°C above boiling point					Findenser suitability when heating at 5°C above boiling point				
Description		Solvent volume (ml)														
Solvent	Boiling point	50	100	250	500	1000	50	100	250	500	1000	50	100	250	500	1000
Diethyl ether	35°C															
DCM	40°C															
Aceton	57°C															
THF	66°C															
MeOH	65°C															
Chloroform	61°C															
EtOAc	77°C															
Ethanol	78°C															
Acetonitrile	82°C															
Heptane	98°C															
Dioxane	101°C															
IPA	108°C															
Toluene	111°C															

KEY

Findenser



Water Condenser



Vigreux Air Condenser



Straight Air Condenser



Findenser in the lab

Findensers reduce water usage by ~3000 litres per day at the University of Cardiff



By replacing water condensers with Findensers on the exhaust of rotary evaporator vacuum pumps, the University of Cardiff are saving over 3000 litres of water per day.

“The Findensers are just as efficient and more cost effective than bespoke water condensers, giving a clean, clutter-free appearance to the bench tops while saving significantly on water usage.”

The University of Cardiff are now able to use Findensers on the exhaust of rotary evaporator vacuum pumps instead of expensive water condensers.

~3000 litres of water per day are being saved, reducing the cost to purchase and dispose of this water.

The water savings will help the University of Cardiff meet its overall reduction target of a 3% reduction per m² per annum.

UCSD Chemistry standardises on Findenser for safety and sustainability



UCSD replaced over 200 water condensers with Findensers, with each researcher using 2-3 on average.

In the process, UCSD has eliminated wasteful water consumption and affirmed a campus-wide commitment to sourcing sustainable solutions where possible. Dr. Cohen sees a major benefit of Findenser as a greener alternative.

Reduction in the time it takes to set-up a reflux reaction. “The implementation of Findenser has been very smooth,” Cohen said. “We’ve seen immediate improvement by eliminating cumbersome hose connections that clutter valuable hood space, creating a safer, simpler environment in the fume hoods.”