

CondensSyn Air Condenser Instructions & Guidance

IMPORTANT!

Please read these instructions carefully before using the CondensSyn™ equipment



- Robust
- Easy to clean
- High performance
- Simple and safe to use
- Environmentally friendly
- Short pay-back time
- No risk of flooding

Information and guidance for use of the Asynt CondensSyn

Thank you for purchasing a CondensSyn air condenser. It works effectively by changing the flow of solvent vapours from laminar to turbulent thereby extracting more energy than a traditional air condenser.

Tests have been made by a leading UK university as to not just how the CondensSyn performs but also as to its use and best practice.

Evaluations and tests were based upon a basic 350mm effective length CondensSyn, a 250ml round bottom flask with 150ml of solvent, below is the data with various solvents.

| <i>Solvent</i> | <i>DCM</i> | <i>Acetone</i> | <i>THF</i> | <i>Ethanol</i> | <i>Acetonitrile</i> | <i>Water*</i> | <i>Toluene</i> |
|-------------------------|------------|----------------|------------|----------------|---------------------|---------------|----------------|
| <i>bp [°C]</i> | 40 | 56 | 66 | 78 | 82 | 100 | 110 |
| <i>oil bath [°C]</i> | 50 | 71 | 78 | 100 | 100 | 120 | 125 |
| <i>difference [°C]</i> | 10 | 15 | 12 | 22 | 18 | 20 | 15 |
| <i>time [min]</i> | 240 | 360 | 300 | 300 | 300 | 240 | 300 |
| <i>%-loss (total)**</i> | -0.8% | -1.3% | -1.4% | -0.5% | -0.9% | -1.6% | -0.9% |
| <i>%-loss per hour</i> | -0.2% | -0.2% | -0.3% | -0.1% | -0.2% | -0.4% | -0.2% |

In a teaching environment the temperature of the heating element is often set higher by students than necessary to ensure a fast heating and vigorous, i.e. clearly visible, boiling of the solvent / reaction mixture. Thus, the temperatures were set to higher values than recommended in research

labs for e.g. stills.

*The higher loss of water measured is due to its high surface tension that resulted in droplets of water sticking to the inside of the entire length of the condenser, rather than all running back to the RBF as was observed for all other solvents.

VERY IMPORTANT

It is recommended that to prevent breakthrough when using solvents below 60C boiling point that a temperature differential is kept below 10C. With Diethyl Ether then this should be no more than 4C. Solvents with a boiling point of over 60C then a differential temperature of up to 20C should be used as a maximum.

Low cost hotplates or heating mantles with poor temperature regulation could cause higher temperatures than indicated leading to breakthrough.

Please note that the tests made with CondensSyn were at normal room temperature of 20C, excessive air temperatures within the fume cupboard or laboratory could cause loss of performance.

Overfilling a reaction flask (more than ½ full) could cause breakthrough.

Condensyn Guide to Volume Scales

200mm CondensSyn is for reactions of 50ml and below

350mm CondensSyn is for reactions of 500ml and below

450mm CondensSyn is for reactions of 1000ml and below