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2020-03-24

## OPERATING INSTRUCTIONS

According to Betriebs-sicherheitsverordnung

UNIVERSITÄT  
DUISBURG  
ESSEN

Offen im Denken

Faculty of Chemistry

Institute: AAC

Work place: AAC Labs

Activity: Laboratory work

### EQUIPMENT

#### Büchi Syncore

### DANGERS FOR HUMANS AND ENVIRONMENT



The Syncore base unit weighs 30 kg and should never be moved or lifted by one person alone. It consists of a rack for 12 samples and 12 matching glass containers with closure option, a reflux module, an inert gas cover and a condenser unit with matching collecting flask. The basic unit is evacuated with the Büchi Vac V-501 vacuum pump, which is suitable for evacuating laboratory equipment to a vacuum of <math><10\text{ mbar}</math>. It must be placed horizontally on a clean, even and stable surface (check with a spirit level). For safety reasons, the distance between the back and sides of the wall or other objects must be at least 30 cm, at the top at least 50 cm. Basic hazards are based on:

- Glass parts that are not vacuum-compatible. These may not be used.
- Solvents that can react with each other when they come together in the pump or the post-condenser. For this reason, it must be ensured that the post-condenser is freed of solvent residues after each use.
- Ignition sources in the immediate vicinity of the pump system output.
- Combustible gases or solvent vapors in the immediate vicinity of the device.
- Damaged glassware. A visual check should be carried out before each use.
- Kinked hoses on the exit side.

### PROTECTIVE MEASURES AND RULES OF CONDUCT



- The base unit may only be used at an ambient temperature between  $5\text{ }^{\circ}\text{C}$  and  $40\text{ }^{\circ}\text{C}$ . It has a heating and shaking mechanism. Heating takes place via a heating foil on the base plate. The temperature range of the heating is room



- temperature up to 150 ° C. Therefore, the parts should never be touched. All glassware used must neither become brittle nor mechanically unstable in the selected temperature range. The shaking motion is horizontal with circular motion and the maximum rotation speed is 600 rpm. The solvent vapors are sucked off via a central vacuum connection and led to the condenser unit. Each sample vessel is individually sealed by the vacuum port, which prevents cross-contamination.
- The vacuum system generates, regulates and maintains the vacuum constant by adjusting the vacuum to the set target pressure. This is done by directly switching the vacuum pump on and off. The pump is started with the main switch. The after-condenser ensures that solvent vapors are condensed out at too low pressure ratios and collected in the collecting vessel. By turning clockwise, this vessel can be removed, emptied and then reassembled.
- The device must be clean before use. Chemical residues should be removed in accordance with the general guidelines for working with chemicals.
- The device must not be operated if solvents could get inside. In such a case, the device must be placed in a well-ventilated fume hood and allowed to stand until all residues have completely evaporated.
- If the device is operated with aggressive and toxic or allergenic chemicals, it must be permanently placed in a fume cupboard.
- When working with strong acids or bases, it may be necessary to wear a protective apron and a face shield in addition to personal protective equipment. If strong acids or bases are distilled, it is advisable to rinse the pump after the application has been carried out. For this, 5-10 mL of water are drawn in via the pump inlet and collected directly at the pump outlet. Thereafter, the pump is blown dry by sucking air.
- There must be no containers, chemicals or other equipment behind, beside or above the unit.

## RESPONSE TO MALFUNCTIONS



- Shut down device immediately, faults must be reported to:  
Maria Madani, if not present O. Schmitz, M. Sulkowski,  
F.Uteschil, S. Meckelmann.

## BEHAVIOR IN CASE OF ACCIDENT / FIRST AID



- Keep calm.
- Call first responders.
- Emergency call: 0112
- Report accident.

## MAINTENANCE / DISPOSAL

- Maintenance only by authorized, competent persons.
- Switch off the device and disconnect it from the mains.
- Regular inspection of wearing parts.