

Specifications D-EVA

1. Process Engineering and Software

- Accelerated and gentle evaporation by lowering the boiling temperature by means of negative pressure up to 0.1mBar and heat supply by infrared light up to 80°C.
- Rotation in the temperatured rotor up to 1500 rpm prevents boiling distortions and aerosol formation and thus cross-contamination.
- A sensor in a reference glass filled with an equivalent solvent is connected to the centrifuge via the rotor.
- The sensor monitors the temperature curve, which depends on the evaporation enthalpy, and automatically triggers the immediate stop of the programme when the final volume is reached.
- The stop signal immediately terminates the heat supply by switching of the IR lamps and ventilating the centrifuge.
- Low final volumes of e.g. 10µ to 150µl for a 10mL dioxin fraction or 0-5 µl PFAS eluate are possible
- Direct quantitative transfer into GC vials with insert without rinsing possible.
- Different evaporation setups and default methods available, adapted eg. for the cleanup fractions of the DEXTech Plus, -Pure, -Heat & DEXTech16 systems and the PFAS applications
- Free parameterisation of each step in the protocol, e.g. adjustment of ramps for pressure reduction or rotor temperature
- 16 memory slots for individual methods

2. Capacity with/without use of the Default methods

- rotor for 15 mL Centrifuge vials:
The evaporation of 25 x 10 mL toluene with the default program "Toluene" to approx. 30 - 100 µL requires only 40 min. The rotor can simultaneously accommodate 26 additional samples whose final volume is not defined. This programme is primarily optimised for good recoveries of the dioxin fraction.

Default methode Toluene:

Toluene	Start	1	2	3
t [min]	40	00:03	00:10	01:30
T [°C]		50	50	45
p [mbar]		30	10	10
ps [mbar]		200	80	50
Rotor [rpm]		800	800	800

Stop temperatur: 30°C

- Rotor for 30 mL centrifugetubes:

The evaporation of 11x 24 mL n-hexane/dichloromethane mixtures with the default program “Hexane” to approx. 300 - 500 µL requires 35 min. The rotor can simultaneously accommodate 12 additional samples whose final volume is not precisely defined. This program is optimised for good recoveries of the PCB fraction. Lower final volumes are possible, but only at the expense of recovery of the Tri-PCB.

Hexane	Start	1	2	3	4	5	6
t [min]	40	00:02	00:02	00:01	00:10	00:01	01:00
T [°C]		45	45	45	45	45	45
p [mbar]		290	290	80	80	60	60
ps [mbar]		300	300	85	85	65	65
Rotor [rpm]		800	800	800	800	800	800

Stop temperatur: 30°C

The evaporation of 23x 8 mL methanol in Falcontubes with the default program “Methanol” to approx. 0 - 5 µL takes approx. 77 min. This program is optimised for good recoveries of PFAS. In case of increased water content in the SPE eluate, an additional short program is required.

Default methode Methanol:

Methanol	Start	1	2	3
t [min]	45	00:03	00:30	02:00
T [°C]		45	45	45
p [mbar]		55	20	20
ps [mbar]		130	130	130
Rotor [rpm]		800	800	800

Stop temperatur: 40°C

Default method Short:

Short	Start	1	2
t [min]	45	00:03	00:07
T [°C]		45	45
p [mbar]		20	20
ps [mbar]		140	90
Rotor [rpm]		800	800

Stop temperatur: 40°C

- Rotor for 130 mL centrifuge tubes:
11 samples with the same solvent composition and the same volume up to 90 mL can be evaporated in one run.
For example, 90 mL toluene can be concentrated to 0.8 mL - 1.3 mL with the default method "toluene" in round about 80 min, or 90 mL n-hexane/dichloromethane mixtures can be concentrated to a residual volume of about 1 - 2 mL with the default method "hexane" in round about 50 min.

3. Technical Details

- RVC 2-33 CDplus (Christ)
 - Precisely active heating with IR-Lamps
 - Size (height closed/opened) 325/715mm x (width) 550mm x (depth) 520mm+20mm connectors
 - Weight 49kg
- CT 04-50 SR (Christ)

- Chemical retardant cryotrap with non-return valve
- Size (height) 490mm x (width) 335mm x (depth) 395mm
- Weight 32kg
- Vacuubrandt MD 4C NT
- 3 rotors for 3 different sizes of the centrifuge vials
 - 1 rotor for centrifuge vials with 15 mL volumes (maximum volume for evaporation 10 mL) fitting perfect to the dioxin fraction
 - 1 sensor for 15 mL vials
 - 1 rotor for centrifuge vials with 30 mL volume (maximum usable volume 24 mL) fitting perfect to the PCB/PBDE fraction
 - 1 sensor for 30 mL vials
 - 1 rotor for centrifuge vials with 130 mL volume (maximum usable volume 85 mL) fitting perfect for evaporation after sample extraction
 - 1 sensor for 130 mL vials
- No crosscontamination
- Very low final volume for the PCDD/F fraction (<100 µL)
- Due to the high volatility of triPCB a final volume ca. 500µL

4. Accessories

- Rotor for 15 mL centrifuge vials (p/n. 16742)
- Rotor for 40 mL centrifuge vials (p/n. 16802)
- Rotor for 130 mL centrifuge vials (p/n. 16929)
- Sensor for 15 mL centrifuge vials (p/n. 16741)
- Sensor for 40 mL centrifuge vials (p/n. 16738)
- Sensor for 130 mL centrifuge vials (p/n. 16755)
- 15 mL centrifuge vials (p/n. 15781)
- 40 mL centrifuge vials (p/n. 16452)
- 130 mL centrifuge vials (p/n. 16725)

5. Available Instruments

- Stand alone instrument D-EVA (p/n. 16900)