

# FD-Application FD-B-109

Catchwords: Biological material, inorganic materials, food, animal food, agricultural products, effluent sludge, natural state, sample preparation analytics, residue analytics, aqueous, metal trays, Teflon-coated metal trays, synthetic vessels

## Lyophilization of biological samples for sample preparation for residue analytics

### Application:

Food, animal food, agricultural products, effluent sludge, Lyophilization for organic residue analytics

### Process technology (summary):

• Product designation	Different biological samples, see above
• Type of solvent, ca. percentage of dry matter	Natural state, aqueous, dry matter 20-90 %
• Type of vessel, number of samples, volume per sample	Product-tray made from metal, glass or plastic, also Teflon-coated – use depending on following analytics, amount depending on sample material and following analytics
• Type of machine/ configuration	Gamma 1-20; Delta 1-24 LSCplus, Delta 1-24 LSC; each with acrylic chamber, heated shelves, temperature sensors
• Freezing (place, range of temperature, freezing point)	-20°C-freezer, freezing point slightly under 0°C
• Process flask-drying /inside /outside /Epsilon*	Outside
• Vacuum main-drying (final vacuum or controlled)	0,37 mbar controlled
• Temperature of shelf, program mode?	20 °C
• Time duration of main drying ( $T_{SF}/t$ )	8 h – 2 days, depending on sample
• Final-drying? Vacuum?	No, just for special samples at 105 °C with air

### Result and comments:

-The choice of material of the trays happens with the following analytics:

For metal analytics no metal trays

For Boron analytics no glass trays

Other types of trays plastic, porcelain

-moisture content of the samples should not be too different in one run

#### \*explanation

Process inside	(Freezing and) drying inside the ice condenser chamber
Process outside	Freezing separately (e.g. freezer), drying outside the ice condenser, e.g. with acrylic chamber
EPSILON	Type of machine with rectangular product chamber, front loader