Technical Data

ICprep Series
Sample Preparation acc. to Pyrohydrolysis

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Technical Data
Pyrohydrolytic Combustion System ICprep

General

- Pyrohydrolytic high-temperature digestion for liquid and solid samples, including AOF columns, with subsequent absorption of the combustion gases in an absorber solution
- Enables the complete digestion of fluorine and other organic halogen compounds in various matrices and is therefore also suitable for the sample preparation of relevant fluorine sum parameters such as AOF, EOF, and TOF
- Aqueous solutions obtained from the digested samples can be easily analyzed for F, Cl, Br, I and S using detection systems not included, such as ion chromatography, ion-selective electrodes, molecular absorption spectrometry, photometry, titration, potentiometry, etc.
- Configurable in various automation levels: from manual operation to fully automatic system with fraction collector for high sample throughput
- Easy to use with preset and standard compliant methods
- Upgradable for determination of up to four other elements, determination of carbon, nitrogen, sulfur and chlorine by optional optical and coulometric detection systems.

Physical Data

Dimensions (W x H x D) (without PC and monitor)	ICprep basic (furnace module incl. automatic boat drive): approx. 1350 mm x 870 mm x 550 mm ICprep automatic (furnace module incl. automatic boat drive, MMS, and fraction collector): approx. 1550 mm x 870 mm x 550 mm
Weight	approx. 64 kg (ICprep basic) approx. 84 kg (ICprep automatic)
Installation requirements	Ambient temperature: 21 – 35 °C Relative humidity: 10 – 90% (30 °C)
Power requirements	110–240 V, 50 – 60 Hz as per IEC 38 and subsequent documents, fuse protection min. 16 A, electrical installations in compliance with VDE 100

The specifications are valid for proper operation of a suited configuration of the device.

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Sample Digestion (furnace module)

Digestion principles	Catalyst-free high-temperature combustion Pyrohydrolytic combustion
Furnace temperature	≤ 1,100 °C
Sample quantities	
liquids	1 – 100 µL
solids	0.1 – 110 mg, as well as AOF columns
Power supply	100 – 240 VAC, 50/60 Hz, max. 16 A
Gas supply	Argon 99.996 % (4.6), Oxygen 99.995 % (4.5) (both, free of halogens and hydrocarbons)
Media	Ultra-pure water (required for pyrohydrolytic combustion), selectable, 0.1 or 0.2 mL/min
Preparation time	10 - 15 min (liquid, solid organic matter)

Sample Collection (absorber module and fraction collector)

Positions	Automated by fraction collector: 100, e.g., centrifuge vessels V: 7 - 15 mL Manual by basic configuration: 40, e.g., centrifuge vessels V: 7 - 15 mL
Collected volume*	< 10 mL, typical 4 -7 mL
Power supply	Line voltage: 24 V; 50 Hz/60 Hz; max 15 VA
Vial size	15 mL
Media	Ultra-pure water (required for pyrohydrolytic combustion)

*depending on used method settings, sample quantity and process duration

Accessories for Sample Introduction

Liquids	**Semi-automatic:** ABD Automatic Boat Drive (horizontal) **Automatic:** ABD Automatic Boat Drive + MMS resp. MMS-T Multi-Matrix Sampler (horizontal)
Solids	**Semi-automatic:** ABD Automatic Boat Drive (horizontal) **Automatic:** ABD Automatic Boat Drive + MMS resp. MMS-T Multi-Matrix Sampler (horizontal)

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Standard Compliance

Application	Parameter	Regulation
Sample preparation* (pyrohydrolytic sample combustion step)		▪ DIN 38409-59 (AOF, AOCl, AOBr, AOI, water)** ▪ ISO 18127 (AOF, AOCl, AOBr, AOI, water)** ▪ EPA 1621 (AOF, water)** ▪ EN 17813 (F, Cl, Br, S in environmental solids) ▪ ASTM D7359 (F, Cl, S in aromatic hydrocarbons) ▪ ASTM D8150 (TOCl in crude oil) ▪ ASTM D8247 (F, Cl in coal) ▪ UOP 991 (F, Cl, Br in liquid organics) etc.

* ICprep complies with the step of sample digestion acc. to pyrohydrolysis, the detection by IC or other suited principles are NOT included in the ICprep

** for AOF enrichment on columns or acc. to batch method, additional systems, such as APU series or AFU 3 are required

Control Software

Control	PC
Control software	multiWin 5.X is classified as GAMP5 category 3
Operating system	Windows 11 (32 or 64 Bit) or higher
Minimum requirements PC	▪ Desktop PC, tower or laptop ▪ RAM: min. 8 GB ▪ Memory: min. 256 GB, SSD recommended ▪ Graphic resolution: min. 1280 x 1024 px. ▪ Interfaces: USB 2.0
Back-up	Fully automatic as well as manual back-up and restore functions
Export function	CSV, LIMS, PDF, AJX
Method library	field-approved, ready-to-use standard methods for routine applications and selected environmental sum parameters included
Features	▪ Intuitive user guidance, self-explanatory menu navigation ▪ Self Check System – automatic monitoring, adaptation, regulation of important system parameters ▪ Plug-and-Start technology – automatic identification of active system configuration ▪ Trouble Shooting Assistant, implemented service and maintenance modules ▪ Predictive maintenance – maintenance interval timer ▪ Automatic and manual gas- and power-saving functions, standby, shutdown, gas-off, and automatic wake-up functions ▪ Multitasking – free editing of sample data even during running measurements

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