Technical Specification of RayKol XTrust series Microwave Digestion System XT-9910

1. Working condition

1.1. Temperature: 0 to 40°C
1.2. Humidity: 15 to 80%
1.3. Power: 220 to 240VAC, 50/60Hz

2. Technical specification & requirement

2.1. Requirement: used for acid digestion, solvent extraction; to pretreat samples prior to AAS, AFS, ICP, ICP-MS.

2.2. Main unit

2.2.1. Power and frequency: industrial single magnetron, output power: 0 to 1000W(adjustable); microwave frequency: 2450MHz.
2.2.2. Microwave cavity: 316L stainless steel square chamber, laser-welded, volume: 35L; multi-layer PFA coatings on surface, corrosion resistant.
2.2.3. Structure of door and sealing mechanism: high-strength explosion-proof door, side opening with float buffer mechanism, able to release part of pressure when pressure in chamber is too large; configure with mechanical and electrical sealing mechanism for safety measures and better user experience.
2.2.4. Anti-corrosive ventilation system: flowrate≥5.3m^3/min, to exhuast extra heat during digestion then extend service life of digestion vessels, for rapid cooling after digestion.
2.2.5. Microwave safety: multiple microwave shielding in cavity; microwave leakage≤0.2mW/cm^2 when working with full power.
2.2.6. ★Sample loading: side loading, load and remove each sample one by one, do not need remove the rotor.
2.2.7. Unit dimension: 610×500×550 mm; net weight: 40kg.

2.3. Temperature and pressure control

2.3.1. ★Utilize mid-infrared contactless temperature sensor that can penetrate through TFM vessels, able to scan and monitoring the actual temperature of all sample solution in real time, and show the curve of temperature changing.
2.3.2. Range of temperature control: room temperature to 400°C, precison: ±0.1°C.
2.3.3. Utilize explosion-proof membrane as pressure control and release.

2.4. Rotor and digestion vessel

2.4.1. Separate rotor: able to assemble digestion vessels to rotor without any tools.
2.4.2. ★Rotation of digestion rotor: continuously rotate in 360°.
2.4.3. Vessel volume and sample count: able to process 6 samples per batch.
2.4.4. ★Material of digestion vessel: all utilize high-strength material, resistant to high temperature and corrosion.

High-pressure vessel 100mL: high-strength PEEK material as vessel, made via single molding, minimal stress and improved safety performance for digestion; modified TFM material as vessel insert, bottom thickness ≥18mm, for tolerance to high pressure.
75mL high-throughput vessel: aerospace complex fibre material as vessel; modified TFM material as vessel insert, bottom thickness ≥18mm, for tolerance to high pressure.

2.4.5. ★Max. temperature resistance: ≥300°C, working temperature: 0 to 250°C; Max. pressure resistance: ≥15Mpa, working pressure: 0 to 5Mpa.

2.5. Control software

2.5.1. Smart control: built-in touch screen control, intuitive and simple software interface; real-time display parameters and operation process (such as temperature and pressure change); standard configuration with RS232 port, for PC connection.

2.5.2. Method setting

2.5.2.1. Able to edit, change, save 100 methods, each method could set 10 digestion steps.

2.5.2.2. Able to save the method and process data of each digestion, for reviewing digestion history and data.

2.5.3. Able for programed temperature increase, gradient temperature increase: set the rate of temperature increase and time.

2.5.4. ★Vessel detection: able to detect rotor type, vessel type, sample count by sensor

2.5.5. Built-in cooling mode: 3 centrifugal ventilation fans to reach rapid cooling, parameter adjustable.

2.5.6. Built-in power correction: able to accurately adjust the microwave output, to ensure consistency of experiment.

2.5.7. Built-in temperature calibration: able to calibrate mid-infrared temperature, to ensure safety.

2.5.8. Multi-level management for user interface is included in setting, instantly record every operation done on the unit, easy for equipment management in laboratory.

2.5.9. Built-in operation oversight, record any operation, unable to change log.

2.6. Safety measure

2.6.1. ★Over 10 active and passive safety features, including real-time monitoring of temperature and pressure, over heat and current protection, detection of abnormal sound, faulty alarm, vessel material with extreme temperature and pressure resistance, centrifugal ventilation fans, to protect users and instrument from hazardous gaseous substances.

2.7. Acid eliminator

2.7.1. Range of temperature control: room temperature to 250°C.

2.7.2. Precison of temperature control: ±0.5°C; LCD digital display.

2.7.3. Sample capacity: for high-pressure, sample count ≥16, diameter for each position: 42mm.

2.7.4. Corrosion-resistant treatment to entire eliminator, Teflon anti-corrosive coating on operating surface, with over-heating protection and humming alarm reminder.

3. Configuration

3.1. Main unit*1 (including integrated control system, control software, ventilation pipe, wrench for vessels)

3.2. Digestion rotor and vessels

3.3. Acid eliminator