

NuWav-Ultra

Microwave Digestion/Extraction System



**Now with
Explo-Protec
Chamber Security
Mechanism**

**Over 30 Years of Cumulative Experience in Microwave Digestion & Synthesis
1st Digester to be constructed COMPLETELY of Stainless Steel 316L
Unparalleled Precision and Control paired with Multiple Safety Parameters**

Versatility of controlling Temperature, Power & Pressure through Precise Sensors

Exclusively Innovated Explo-Protect Chamber Security Mechanism

Completely Constructed from Industrial Grade 316L Stainless Steel

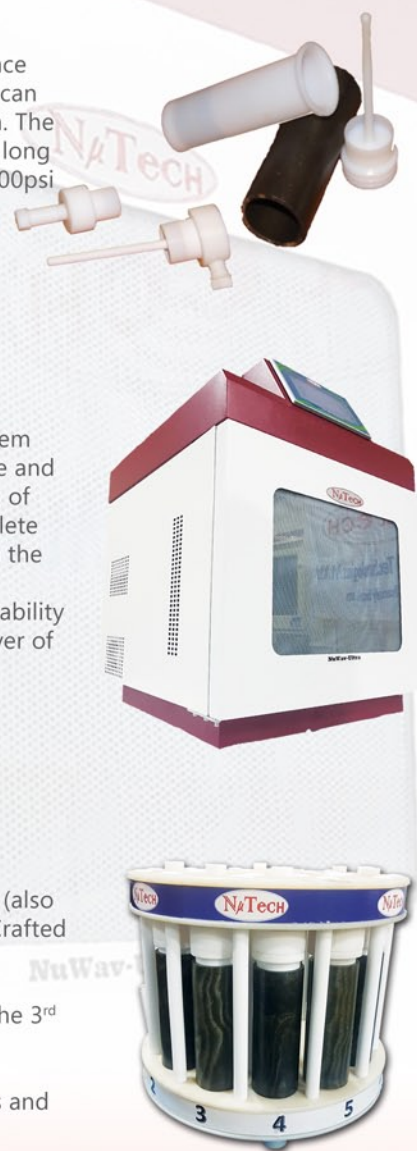
Ultra-Strength Aerospace Composite Fiber Outer-Jacket and TEFLON® Vessels

NuWav-Ultra Microwave Digestion/Extraction/Pressurised Reactor system, a sub-version of tradition, is a user-oriented practical compact Pressurised Microwave Reactor made by **Nutech** with over 30-years of combined experience in Microwave Technology. Work effortlessly and hassle-free with the most advanced and precise Microwave-Digester available. **NuWav-Ultra** provides safety, unparalleled durability and convenience of operation yet assuring a plethora of customisable parameters.

The Outer Jacket of the Vessels of NuWav-Ultra is exclusively made from Ultra-Strength Aerospace Composite Fiber which is practically indestructible providing the 1st layer of safety. The material can withstand very High Pressure and Temperature thus making it Resistant to any kind of explosion. The natural ability of the material to resist Acid Corrosion makes it very safe to use and gives it very long life. The performance indicators show that the material has a Compressive Strength of upto 10000psi and Temperature Resistance of 500^o-600^o, thus eliminating any kind of safety risks of the user.

The industry leading Pressure Measuring Technology with the help of Piezoelectric Crystal and Temperature Measurement using Platinum (Pt100) Resistance Sensor paired with the Intelli-System using Closed Loop Control of Microwave Power by Inverter Technology ensures the most precise and effortless monitoring and controlling of process parameters available anywhere. The application of the Piezoelectric Crystal and Teflon® encased Platinum Temperature Sensor brings about complete isolation of samples from the Pressure Measurement and Temperature Measurement Systems in the Digestion process thus solving the problems of Cross-Contamination of samples due to the commonly used air pipes and other sensors in the market. The High-Pressure Measurement capability of the Pressure Measurement System and Over-Pressure Cut-Off Mechanism provides the 2nd layer of safety and takes this instrument much ahead of its competition.

The innovative design and materials used in creating the Rotor and the Digestion Vessels of the NuWav-Ultra is one of its kind. The Rotor has a 12-Vessel High-Throughput processing capacity (also available in 2, 4, 6, 8, 10 and 24 Vessel configurations). The Vessels and the Rotor are Machine-Crafted from single blocks of Teflon® which is Corrosion/Acid Resistant and can withstand very High Temperatures. The Rotor itself has an industrial grade Stainless Steel 316L Skeleton embedded, helping it withstand very high amount of Pressure from the vertically placed Vessels providing the 3rd layer of safety. The Rotor system can be disassembled very easily for cleaning purposes. The continuous Unidirectional Rotation of the Rotor containing the Digestion Vessels breaks the conventional <360^o back-forth motion practice ensuring Homogenous Heating of all the vessels and reducing the impact on the Rotor motor, thus extending its lifespan.



Quantified Vertical Anti-Blast Screw-In Safety Locking design of the Inner Vessels of the NuWav-Ultra ensures samples to be closed completely and triggers a quantified pressure release when subjected to very high pressure providing the 3rd layer of safety. The Screw-In Locking Mechanism used along with safety membrane ensures the digestion vessels to be sealed completely under normal working conditions eliminating the common problem of leaking and incomplete digestion found in similar products which rely on deformation of roof plate for releasing pressure. And only when the Inner Vessels are subjected to exorbitant high-pressure, the Safety Membrane will automatically pop and release the pressure. This method helps in achieving Quantified Vertical Blast Pressure Relief and hence eliminating any potential risk to the user, surrounding and the system itself guarantying a longer life of the instrument. Under normal conditions, the Screw-In Safety Locking Mechanism won't blow out and thus does not require replacement. In addition, it is very easy to install and remove before initiation and after completion of a digestion process.



Sturdy and Durable Industrial Grade Stainless Steel 316L construction of the whole Instrument Structure ensures no rust and a long lifespan of the NuWav-Ultra without any maintenance. Professional Focused Microwave design provides for High Efficiency heating. Multi-layer chemical resistant colour coating of the whole instrument improves service life and safety of the system. The Explo-Protac Chamber Security Mechanism pops-up the door(4-12mm depending on the pressure), releases the pressure and pops back to its closed position in case of an explosion inside the Digestion Chamber thus providing the 5th layer of safety. Double Locked Self-Checking System and Push-Button Door release ensures simple and easy operation yet providing safety to the user. High Speed Air Cooling and Exhaust Systems achieves fast cooling and unparallel exhaust, improving operational efficiency.



Industry's 1st Intelli-System integrated in a 7-Inch Acid/Corrosion Resistant Touchscreen with a Graphical UI makes operating the NuWav-Ultra effortless. The system provides Pre-Set modes and step-by-step guidance for the user's ease. All vital information such as Real-Time Temperature, Pressure(in selectable Units like Bar, Psi , MPa), Instantaneous Power Output, Safety Power / Temperature / Pressure, Hold time, Time Left, Total Elapsed Time, Process Name as well as Real-Time Temperature-Power-Pressure(in different colours and scale and are switchable) vs. Time Graph is displayed. Conversion of Conventional conditions to Microwave Digestion parameters are provided in the system. Safety/security warnings (Door Ajar, Cooling and Exhaust System Fan Malfunctions and RPM), Process Completion are indicated to the user.



The Intelli-System's internal algorithm dynamically controls the Microwave Power based on Real-Time conditions thus eliminating any Temperature Overshoot. Non-Pulse Low-Trajectory Microwave Power is controllable in 1Watt increments. In case of any anomalies the system warns the user and stops operating thus providing the user another layer of safety. Digestion Programs can be saved, edited and sorted by Name/Date for later use, each program having upto 5 steps of inputs of Temperature, Pressure, Power, Hold-Time as well as Safety Temperature, Safety Pressure and Safety Power Cut-Off inputs. The sensing, control capabilities and integrated safety parameters of the system makes the Intelli-System the most versatile and user friendly system which is way ahead of time.



Technical Specifications Of NuWav-Ultra Microwave Digestion/Extraction System

Power	220-240 VAC 50/60Hz 16A (120VAC Optional)
Microwave Frequency	2450MHz
Installed Power	1800Watt
Maximum Output Power	1000Watt, Non-Pulse Continuous Automatic Variable Frequency Control; 1Watt Increment
Display	7-Inch Acid Resistant Touchscreen; Resolution: 800x480px
Rotor Design	Load 12 Closed Digestion Vessels Vertically
Pressure Measurement and Control System	Piezoelectric Crystal Pressure Sensor, Pressure Control Range: 0-10MPa (1500 psi); Accuracy: ±0.01MPa
Temperature Measurement and Control System	High Precision Platinum Resistance Temperature Sensor (Pt100); TEFLON® Encased; Temperature Range: 0°C-300°C; Accuracy: ±1°C
Outer Vessel Material	Explosion Proof Aerospace Composite Fiber
Inner Vessel Material	TEFLON®; Acid Resistant and High Temperature Withstanding
Chamber Exhaust System	High-Power Anti-Corrosion Brushless Fan; Exhaust Speed: 3.5m³/min
Working Environment Conditions	15-80% RH / 10°C-40°C / Dust-Free Well-Ventilated
Dimensions	450mm X 515mm X 510 mm (L X B X H)
Net Weight	65Kgs

Standard 12 Vessel Rotor System

(Optional: 2, 4, 6, 8, 10, 24 Vessel Configurations Available)

Maximum Pressure	15MPa (2250psi)
Maximum Sustained Temperature	300°C
Maximum Working Temperature	250°C
Inner Vessel Volume	100ml
Outer Vessel Material	Aerospace Composite Fiber
Inner Vessel Material	TEFLON® (TFM/Modified PTFE)
Maximum Vessel Capacity	12 Vessels

Application Area

Food and Drug (milk and dairy products), Cosmetics, Agricultural and Sideline Products, Aquatic Products, Biological Tissues, Various Types of Feed, Energy and Petrochemical, Geology and Mineral Resources, Environmental Resources (air, water, soil), Metals, Alloys, Ceramics, RoHS, Medicine, Domestic Waste, etc.

Our Other Products:

Microwave UV-Ultrasonic Combined Synthesis System



NuWav-Pro

Microwave Synthesis System



NuWav-Ultra

NutechAnalytical Technologies Private Limited

*Actual colour and design may vary.

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