KINTEK

# Hydrothermal Synthesis Autoclaves & Liners Catalog

Contact us for more catalogs of PTFE(Teflon) Products, Reaction & Synthesis Equipment, Electrochemistry & New Energy Testing, Basic Labware & Containers, Fluid Transfer, Tubing & Valves, Sample Preparation & Filtration, General Consumables & Seals, High-Purity & Trace Analysis, Custom Machining Services, etc.

# KINTEK

## COMPANY PROFILE

## >>> About Us

From everyday basic labware (beakers, measuring cylinders, crucibles, dishes, reagent/wash bottles, centrifuge and digestion tubes), high-purity trace analysis instruments, and cleaning/storage tanks, to comprehensive fluid transfer components (tubing, fittings, valves), sample prep and filtration tools (separatory funnels, burettes, filters, pipettes, tweezers, spatulas), and general consumables (stirring bars, O-rings, gaskets, seal tapes, caps, septa), extending all the way to advanced derivative and reaction apparatus like standard or custom electrochemical cells, battery testing fixtures, electrode accessories, hydrothermal synthesis liners, microwave digestion vessels, microchannel reactors, and condensation/reflux devices, KINTEK manufactures virtually all imaginable laboratory supplies crafted from PTFE and PFA. Backed by end-to-end custom CNC fabrication, we are equipped to deliver absolutely everything from complex non-standard machined parts and bespoke laboratory setups to high-volume orders, maintaining an exclusive and absolute focus on high-performance fluoropolymer materials.

# High Temperature Corrosion Resistant Hydrothermal Synthesis Reactor With Tfm Inner Liner And Straight Cylinder Design

**Item Number: PL-CP171**

## Introduction

Professional grade high-pressure hydrothermal synthesis reactors featuring corrosion-resistant TFM liners and straight-wall geometry. These units are ideal for demanding chemical synthesis, trace analysis, and advanced material research where absolute purity and customizable performance are required for industrial lab excellence.

Learn More

| Application | Description | Key Benefit |
|---|---|---|
| Nanomaterial Synthesis | Precise control of temperature and pressure for the growth of metal-oxide nanoparticles. | Uniform particle size distribution. |
| Geochemical Digestion | Dissolving mineral samples in concentrated acids for ICP-MS or ICP-OES analysis. | Minimal trace element background noise. |
| Hydrothermal Carbonization | Converting biomass into carbonaceous materials under high-pressure aqueous conditions. | High conversion efficiency and purity. |
| Zeolite Crystallization | Synthesizing molecular sieves and catalysts using specific alkaline templates. | Stable environment for crystal growth. |
| Polymerization Research | Conducting high-temperature polymerization reactions in aqueous or solvent-based media. | Chemical inertness prevents polymer fouling. |
| Crystal Growth | Growing single crystals from aqueous solutions at supercritical or subcritical temperatures. | Exceptional clarity and structural integrity. |
| Waste Treatment Testing | Simulating high-pressure oxidative environments for treating industrial wastewater. | Durability against diverse chemical loads. |

| Specification Category | Parameter Details for PL-CP171 |
|---|---|
| **Model Identifier** | PL-CP171 Series |
| **Liner Material** | High-Purity TFM (Modified PTFE) |
| **Outer Shell Material** | High-Strength Corrosion-Resistant Alloy / Stainless Steel |
| **Internal Geometry** | Straight-Wall Cylinder (Direct Recovery Design) |
| **Standard Volume Options** | 50ml, 100ml (Reference Standard) |
| **Customization Availability** | Full Bespoke Fabrication Available for Non-Standard Volumes |
| **Chemical Compatibility** | Universal (Strong Acids, Bases, Organic Solvents) |
| **Operating Temperature** | High-Temperature Optimized (Reference TFM Limits) |
| **Pressure Rating** | Industrial Grade High-Pressure Containment |
| **Closure Type** | Precision Machined Threaded / Bolted Secure Closure |
| **Fabrication Method** | End-to-End Precision CNC Machining |

# Custom Tfm Reaction Vessel With Stainless Steel Jacket And Ptfe Inner Cup For High Corrosion Resistance

## Item Number: PL-CP183

## Introduction

Premium custom TFM reaction vessel featuring a stainless steel jacket and PTFE liner for ultimate chemical resistance. This high-pressure system ensures zero contamination in aggressive synthesis environments, providing industrial-grade reliability for critical laboratory applications and advanced materials research.

Learn More

| Application | Description | Key Benefit |
|---|---|---|
| Graphene Oxide (GO) Synthesis | Handling concentrated sulfuric and phosphoric acids combined with strong oxidants like potassium permanganate. | Resists aggressive oxidation and prevents metallic contamination of the GO sheets. |
| Hydrothermal Synthesis | Synthesis of zeolites, catalysts, and nanomaterials at high temperatures and pressures in aqueous solutions. | Maintains structural integrity under pressure while remaining chemically inert to the precursors. |
| Trace Metal Digestion | Dissolving mineral samples or environmental materials in concentrated nitric or hydrofluoric acid for ICP-MS analysis. | Ultra-low blank levels and zero leaching of heavy metals from the vessel walls. |
| ZIF-8@GO Composite Production | Complex synthesis of metal-organic frameworks within a graphene oxide matrix. | Ensures high chemical purity of the composite material by eliminating external impurities. |
| Pharmaceutical Acid Washing | Cleaning and purification of active pharmaceutical ingredients using harsh chemical reagents. | Prevents cross-contamination between batches and ensures high-purity final products. |
| Geochemical Sample Prep | Decomposition of silicate rocks and ores using hydrofluoric acid at elevated temperatures. | Durable fluoropolymer liner survives repeated exposure to HF which would dissolve glass. |
| Battery Material Testing | Testing of electrolyte components and electrode materials in highly reactive chemical environments. | Long-term reliability and resistance to degradation from acidic or basic electrolyte additives. |
| Bespoke Reaction Setups | Custom-designed reaction environments for proprietary chemical processes requiring non-standard volumes. | Tailored geometry and volume ensure optimal mixing and reaction efficiency for specialized tasks. |

| Feature | Specification Details for PL-CP183 |
|---|---|
| **Model Identifier** | PL-CP183 (Custom Configuration) |
| **Inner Liner Material** | High-Purity TFM (Modified PTFE) or Virgin PTFE |
| **Outer Jacket Material** | 304 or 316L Stainless Steel (Precision Machined) |
| **Maximum Operating Temp** | Customizable (Standard range up to 260°C depending on configuration) |
| **Operating Pressure** | Customizable based on jacket wall thickness and sealing design |
| **Available Volumes** | Fully customizable from 10ml to 2000ml+ based on user requirements |
| **Sealing Design** | Threaded Cap, Bolted Flange, or Custom Compression Seal |
| **Chemical Compatibility** | Universal (Includes HF, Aqua Regia, Strong Acids, Bases, and Solvents) |
| **Fabrication Method** | Full End-to-End Custom CNC Machining |
| **Optional Features** | Pressure relief valves, thermowells, stirring bar compatibility, sampling ports |

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