

# Custom Ptfе Thermal Insulation Sleeves Laboratory Vessel Condensation Jackets Virgin Fluoropolymer Machined Components

Item Number: PL-CP63



## Introduction

Precision-engineered custom PTFE thermal insulation sleeves and condensation jackets provide unmatched chemical resistance and extreme thermal stability for high-purity laboratory vessels, ensuring reliable performance in demanding trace analysis, advanced material research, and corrosive industrial chemical processing environments.

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Application	Description	Key Benefit
Trace Metal Analysis	Protecting sample vessels from environmental contamination during acid digestion and heating steps.	Zero-leaching high-purity environment
Flow Chemistry	Custom-jacketed sections for microchannel reactors requiring precise temperature maintenance along the flow path.	Uniform thermal distribution
Cryogenic Storage	Insulating sleeves for storage tubes and vials containing biological samples or volatile chemicals.	Prevents rapid temperature fluctuations
Corrosive Reflux	Condensation jackets for glass reactors processing aggressive mineral acids or organic chlorides.	Superior resistance to acidic vapors
Semiconductor Processing	Custom shrouds for quartzware used in high-purity etching and cleaning baths.	Prevents contamination and heat loss
Vacuum Distillation	Thermal sleeves designed to maintain high internal temperatures while preventing external condensation.	Improved distillation efficiency
Electrochemical Testing	Insulated housings for electrodes and reaction cells operating at elevated temperatures.	High dielectric and thermal protection
Pilot Plant Scale-up	Bespoke large-format jackets for transition vessels between lab-scale and production-scale equipment.	Scalable custom engineering

Feature	Specification for PL-CP63 and Custom Variants
Material Base	100% Virgin Grade Polytetrafluoroethylene (PTFE)
Manufacturing Process	5-Axis CNC Machining, Lathe Turning, Precision Milling
Dimensional Range	Fully Customizable (Inner Diameter 5mm to 500mm+)
Wall Thickness	Application-specific (Standard range 1.0mm to 50.0mm)
Operating Temperature	-200°C to +260°C (-328°F to +500°F)
Thermal Conductivity	~0.25 W/m·K (Provides excellent insulation)
Coefficient of Friction	0.05 to 0.10 (Dynamic/Static)
Surface Finish	Ra 0.4µm to 1.6µm depending on requirements

Application	Description	Key Benefit
Feature	Specification for PL-CP63 and Custom Variants	
Chemical Resistance	Resistant to all known chemicals except molten alkali metals	
Compliance	FDA/USP Class VI compliant materials available upon request	
Design Options	Split-sleeve, Threaded, Flanged, or Tapered Fit	