500°C Ultra High Temperature Automatic Hot Press 5 Ton 180X180Mm Platens Benchtop Design

Item Number: XP63

Introduction

KINTEK's compact automatic hot press delivers 500°C ultra-high temperature, 5-ton force, and precise 180x180mm heated platens — ideal for advanced polymer, ceramic, and battery research. Benchtop design with water cooling and PID control ensures safe, repeatable results. Get a quote.

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Application	Description	Key Benefit
High-Performance Polymer Molding	Compression molding of high-temperature thermoplastics such as polyimide (PI), polyetheretherketone (PEEK), and fluoropolymers. Requires precise temperature control to avoid thermal degradation while achieving full densification.	Produces void-free, dimensionally stable parts with optimized crystallinity and mechanical properties.
Advanced Ceramic Lamination	Pre-sintering lamination of glass-ceramic tapes, LTCC multilayers, and electronic substrates. The uniform pressure and ramp-controlled heating prevent warpage and delamination in fragile green bodies.	Ensures layer alignment and thickness uniformity critical for circuit integrity and device yield.
Solid-State Battery Electrolyte Bonding	Hot pressing of solid electrolyte films (sulfide/oxide/polymer) onto electrodes in all-solid-state battery fabrication. Elevated temperature enhances ionic conduction across the interface.	Boosts ionic conductivity and mechanical adhesion, increasing energy density and cycle life.
Metal Foil Diffusion Bonding	Diffusion bonding of thin metal foils for thermal management components, micro-channel heat exchangers, and fuel cell interconnects. Inert gas option prevents oxidation.	Creates metallurgically sound bonds without filler metals, preserving electrical/thermal conductivity.
Thermoplastic Composite Consolidation	Consolidation of fiber-reinforced thermoplastic prepregs (CF/PEEK, GF/PEI) for aerospace and automotive test coupons. Controlled cooling rates achieve desired matrix crystallinity.	Produces high-fiber-volume laminates with excellent interlaminar shear strength and minimal voids.
Powder Compaction for Sputtering Targets	Uniaxial pressing of ceramic or metal powders into dense green bodies for sputtering targets or subsequent sintering. Uniform compaction ensures consistent shrinkage during firing.	Achieves near-theoretical density and homogeneous microstructure, reducing target conditioning time.

Parameter	Specification	Notes & Safety Tips
Model	XP63	Formerly marketed as PCAH-5T1818A / PCH-5T1818A; now unified under the XP63 designation.
Operation	Fully Automatic Hydraulic Control	Microprocessor-managed pressing cycles with recipe storage capability for repeatable results.
Maximum Force	0 – 5 Tons (0 – 50 kN)	Continuously adjustable; force control accuracy ±0.5% of set point via digital feedback.
Maximum Temperature	0 – 500 °C	Maximum continuous operating temperature; short-term excursion capabilities may be discussed with our application engineers.
Heating Power	1500 W	Rapid heat-up time; approximately 20 minutes from ambient to 300°C.
Platen Size	180 × 180 mm	Hardened, precision-ground tool steel platens with corrosion-resistant coating.
Surface Pressure	~15.4 Bar (1.54 MPa)	Based on full platen area; actual local pressure may be higher with smaller molds.
Cooling Method	Circulating Water Cooling	Must be connected and operational whenever temperature exceeds 150°C. Use clean water with corrosion inhibitor for long-term reliability.

Parameter	Specification	Notes & Safety Tips
Power Supply	AC 220V / 50Hz, Single Phase	Standard 3-prong plug; ensure circuit is adequately grounded. Compatible with most lab bench power strips.
Setup Dimensions	290 × 290 × 420 mm (W × D × H)	Overall height includes handwheel and control box; ensure at least 100mm clearance on sides for ventilation.
Net Weight	90 kg	Two-person lift recommended; optional heavy-duty caster stand available for mobility.