

Laboratory Manual Hot Press For Battery Research And Material Science

Item Number: XP51



Introduction

Explore our manual hot press for precise heating and pressing up to 300°C and 30 tons. Designed for battery labs, polymer processing, and composite research with water-cooled platens. Quick heating and uniform temperature distribution ensure consistent results.

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Application	Description	Key Benefit
Battery Electrode Pressing	Calendaring and hot pressing of cathode and anode materials for lithium-ion, solid-state, and sodium-ion batteries. The controlled temperature activates binders and improves electrode density, enhancing electrochemical performance.	Uniform density and thickness across large-area electrodes improve cell consistency and energy density.
Polymer and Composite Molding	Compression molding of thermoplastic pellets, thermoset preregs, and composite laminates into test specimens. The combination of heat and pressure ensures proper flow, wet-out, and void elimination.	Produces high-quality, void-free test plaques with reproducible mechanical properties.
Sample Preparation for FTIR/XRF	Creating KBr pellets for FTIR spectroscopy or fused beads for XRF analysis. The smooth, parallel platens and precise force yield transparent, homogeneous pellets essential for accurate spectra.	Achieves high clarity and consistency, reducing spectral artifacts and improving detection limits.
Ceramic Green Body Compaction	Uniaxial pressing of ceramic powders (alumina, zirconia, etc.) into green bodies for subsequent sintering. High pressure and optional heating can improve green density and strength.	Higher green density leads to reduced shrinkage and fewer defects during sintering.
Adhesive and Sealant Curing	Heat-curing of structural adhesives, films, or sealants under controlled pressure for bond strength evaluation or sample assembly.	Ensures complete cure and uniform bond line thickness, critical for mechanical testing.
Thin Film Lamination	Laminating layers of polymers, adhesives, or functional films onto substrates for electronic or packaging applications. Precise pressure and temperature prevent delamination and bubbles.	Achieves fault-free, multi-layer stacks with consistent thickness and optical clarity.
Composite Material Development	Fabricating fiber-reinforced polymer composites for prototyping aerospace, automotive, or sporting goods components. The press's high force and even heating are ideal for vacuum bag or matched-die molding.	Delivers near-net-shape parts with low porosity and excellent mechanical properties.
Thermoplastic Welding/Joining	Hot pressing of thermoplastic components or sheets for welding or joining applications in research and small-scale production.	Creates strong, homogeneous joints without additional adhesives.

Parameter	Value
Standard Model	XP51 (formerly PCSM-30T3030)
Platen Working Temperature	0 – 300°C
Heating Power	3500 W
Platen Size	300 × 300 mm
Working Pressure	0 – 30 T (approx. 300 KN)
Platen Opening / Piston Stroke	150 mm
Cooling Method	Circulating water chilling
Power Supply	220 V / 50 Hz (optional 220 V / 60 Hz)

Parameter	Value
Dimensions (Equipment)	Approx. 700 × 400 × 600 mm (height may vary by configuration)
Weight (Net / Packaged)	Approx. 280 Kg / 350 Kg