

MiniLab 090 Pumping Performance

MiniLab 090 vacuum deposition systems are designed for straightforward glovebox integration and can be connected to gloveboxes produced by numerous manufacturers.

Once connected, the systems offer excellent pumping performance. In part, this is due to optimised hardware positioning incorporated into all MiniLab platforms. This positioning maximises *effective* pumping speed (note that turbomolecular pump specification pumping speeds are only achieved under ideal conditions and with proper positioning of in-chamber hardware). However, the connection of the chamber to a glovebox provides further enhanced performance, primarily due to the absence of water inside the glovebox. As a result, even with the chamber door open for long periods, chamber internal surfaces are exposed to only minimal levels of moisture—leading to negligible adsorption. Since adsorbed water is the single greatest barrier to pressure drop during pumping, this means that MiniLab 090 systems can achieve process base pressures extremely fast. For example, typically configured units (e.g., with 400 L/s turbomolecular pumps, as appropriate for 90 litre chambers) can reach 1×10^{-6} mbar in 30 minutes, and drop to base pressures of below 5×10^{-7} mbar in 60–90 minutes. Pumping times as short as this allow for excellent sample throughput.

In support of this, the plot below shows real data obtained using a MiniLab 090 system fitted with a 400 L/s turbomolecular pumping system. As is shown, after initiating the pumping routine the chamber pressure drops below 1×10^{-6} mbar within 30 minutes. The system's specified base pressure (5×10^{-7} mbar) is reached in 62 minutes. Beyond the scope of the plot, the pressure continues to drop to an absolute base of about 1.3×10^{-7} mbar.

