A rigid magnetic disk substrate is spin coated using a closely confining, stationary air barrier adjacent the surface being coated. The coating is applied through a slotted opening in the air barrier which is progressively closed as the coating is applied and completely sealed during the spin-off operation. During the application of the coating, the air barrier is positioned approximately 0.15 inch from the disk substrate surface and prior to spin-off, the barrier is moved to a position 0.025 inch from the coated surface. Further, during the high speed spin-off cycle a high kinematic viscosity gas, such as helium, is introduced into the space between the barrier and the coated surface to establish a laminar flow condition and eliminate spoking of the coated material.