This paper proposes a Lyapunov-based switching logic within the framework of adaptive mixing control (AMC), where a weighted combination of a family of candidate controllers can be inserted in the loop to regulate the output of an uncertain plant. The proposed AMC scheme employs a bank of parallel estimators, or multiple estimators, together with a switching logic that orchestrates which estimate should be evaluated by the mixer. The switching logic is driven by input/output data and uses Lyapunov-based criteria to assess the best estimate among the bank of parallel estimates. The resulting scheme guarantees convergence of the switching signal in finite time to a controller that satisfies a Lyapunov inequality implying a prescribed stability margin. The problem of convergence to the desired controller is addressed both analytically and numerically. In contrast, most classes of continuous tuning adaptive control or switching adaptive control schemes do not guarantee that after the switching stops or the adaptation is switched off the resulting closed loop linear time-invariant (LTI) system is stable, unless there is sufficient plant excitation that guarantees convergence to the desired fixed parameter controller. The proposed scheme guarantees that if the desired controller is switched on, it will never be switched off thereafter. Furthermore, simulations demonstrate that while alternative adaptation methods can converge to an LTI unstable feedback loop, the proposed scheme consistently converges to the desired controller.