In recent years, the pharmaceutical industry has seen a shift from batch manufacturing towards continuous manufacturing (CM), with continuous direct compression (CDC) as the preferred CM technique. CDC involves several unit operations like powder handling, loss-in-weight-feeding, continuous blending, and tableting. Many newly developed active pharmaceutical ingredients (APIs) now consists of cohesive particles with a mean particle size under 100 µm, a broad particle size distribution (PSD), and a tendency to agglomerate, making them challenging to process in CDC lines. Improving the flowability of these cohesive powders is most effectively achieved with small quantities of silicon dioxide dry-coated onto the API surface. However, limited research has been done with regards to the impact of a broader range of glidants, such as mesoporous silica and tricalcium phosphate, on the bulk properties of challenging APIs and their effects across CDC unit operations. Additionally, the phenomenon of oversilication is barely described in current literature. This thesis aims to improve the fundamental knowledge of processing challenging APIs in CDC through the use of various glidants, specifically by examining their effects on bulk properties and the performance of key CDC operations, including loss-in-weight feeding and continuous blending.