We define the operation of composing two hereditary classes of permutations using the standard composition of permutations as functions and we explore properties and structure of permutation classes considering this operation. We mostly concern ourselves with the problem of whether permutation classes can be composed from their proper subclasses. We provide examples of classes which can be composed from two proper subclasses, classes which can be composed from three but not from two proper subclasses and classes which cannot be composed from any finite number of proper subclasses.