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**Abstract** : Mixture experiments were firstly introduced in the mid fifty.s. This thesis introduces a review of some known classical and orthogonal designs for mixture experiments together with a new orthogonal blocking design. Comparisons between various known designs of mixture experiments and our proposed design are held in the light of some criteria of optimalityof designs. This thesis consists of four chapters and three appendices. A brief summary of their contents is given below. The main characteristics of mixture experiments and the polynomial models associated with it are introduced in Chapter I which also states the differences between mixture experiments and factorial experiments. , Chapter II introduces so classical and orthogonal blocking designs. Explicit estimates of regression parameters are shown. In Chapter III the auther develops a class of orthogonal blocking design and determines the D-optimal design in that class. In Chapter IV the auther makes brief comparisons between some of the considered designs in this thesis and indicates two further points for future research. The appendices contains some auxiliary results that are employed in this thesis