

An invention relates to zirconium and niobium-based alloys and to methods for the production thereof and can be used for nuclear energy engineering. An invention makes it possible to produce a zirconium-based alloy for producing elements exhibiting improved technological and performance characteristics and used for the active zone of a nuclear reactor. The inventive zirconium-based alloy comprises the following components: 0.9-1.1 wt. % niobium, 0.05-0.09 wt. % oxygen, the rest being zirconium. The structure of said alloy consists of alpha-zirconium having oxygen inhomogeneity zones equal to or less than 30 nm, nonstoichiometric zirconium suboxide and beta-niobium. A method for alloy producing consists in producing a mixture from zirconium-containing material and niobium pentaoxide in the form of oxygen-containing and basic niobium-containing material, preparing said mixture for melting, melting the mixture and in forming a billet.