tungstate, based on the total weight of the catalyst, is usually up to about 20%, as described, for example, in the US patent 2,820,062.

The proportion of the alkali metal tungstate in the catalyst can be increased to 25% by weight and more by means of specific processes for producing the catalyst, in which the support material is multiply impregnated with a solution of the alkali metal tungstate in a comparatively complicated process (see, for example, EP 0 832 878 A2 and DE 103 38 887 A1); increasing the concentration of the alkali metal tungstate above a proportion of about 25% by weight brings about an increase in the selectivity only together with an lower activity if the alkali metal and tungsten in the oxidic composition are applied to the catalyst in a stoichiometric ratio of 2:1 (see DE 103 38 887 A1). Although the loading can be increased to more than 35% by weight by use of a nonstoichiometric ratio of caesium and tungsten in the solution used for the impregnation, a significant increase in the conversion or the selectivity can no longer be observed at such high loadings; particularly at loadings above 45% by weight, based on the total weight of the catalyst, conversion and selectivity even decrease.

It was therefore an object of the ~~present invention~~embodiments disclosed herein to provide a catalyst and a process for producing it, which catalyst displays an improved activity and selectivity compared to catalysts known from the prior art for the reaction of hydrogen sulphide with alkanols, in particular with methanol, to form alkyl mercaptans, in particular methyl mercaptan. The improved activity and selectivity should be present at all molar ratios of hydrogen sulphide to methanol customarily used in processes for the synthesis of alkyl mercaptans, for example in the $H_2S$:MeOH range from ≥ 1:1 to ≤ 10:1 and in particular also at comparatively low molar ratios of hydrogen sulphide to methanol, i.e. at an $H_2S$:MeOH ratio of ≤ 3:1, preferably ≤ 2:1.

It has now surprisingly been found that this object is achieved by a process for producing a catalyst comprising a support material and an oxidic composition containing oxygen together with at least one alkali metal and tungsten, said process comprising the steps:

1) provision of at least one support material, an oxidic tungsten compound and at least one separate alkali metal compound,
2) mixing of the support material with the oxidic tungsten compound and the at least one separate alkali metal compound in order to obtain a catalyst composition and
3) shaping of the catalyst composition obtained,

and also the catalysts produced by this process.

In a first aspect, there is provided a process for producing a catalyst comprising a support material and an oxidic composition containing oxygen together with at least one alkali metal and tungsten, said process comprising the steps:

1) provision of at least one support material, an oxidic tungsten compound and at least one separate alkali metal compound,
2) mixing of the support material with the oxidic tungsten compound and the at least one separate alkali metal compound in order to obtain a catalyst composition and
3) shaping of the catalyst composition obtained.

In a second aspect, there is provided a catalyst which comprises a support material and an oxidic composition containing oxygen together with at least one alkali metal and tungsten and is produced from particles of the support material having a particle size of less than 1000 µm.

In a third aspect, there is provided a process for preparing alkyl mercaptans by reaction of alkanols with hydrogen sulphide in the presence of a catalyst as defined above or in the presence of a catalyst produced by a process as defined above.

In the processes known from the prior art which involve an alkali metal tungstate and a support material such as aluminium oxide, a solution of the alkali metal tungstate is always produced first and is then added to the support material. This solution is then usually applied to particles of the support material having a size of a number of millimetres in an impregnation process, preferably a multistage impregnation process.

It has now surprisingly been found that an increased activity and selectivity of the catalyst can be obtained when the support material is not impregnated with a solution containing both the alkali metal and the tungstate, but instead the support

material is mixed with an oxidic tungsten compound which preferably does not contain any alkali metal and with a separate alkali metal compound.

The catalysts produced by the process of the invention make it possible to achieve a higher conversion and a greater selectivity under identical reaction conditions and the same loading compared to catalysts known from the prior art which have been produced by the impregnation process.

Furthermore, the process of the invention allows simple variation of the ratio of the content of alkali metal to the content of tungsten in the oxidic composition, expressed as ratio of alkali metal oxide $A_2O$ in % by weight, based on the total mass of the catalyst, to tungsten(VI) oxide $WO_3$ in % by weight, based on the total mass of the catalyst. The total loading of the catalyst with the oxidic composition containing the alkali metal and tungsten is the sum of the abovementioned proportions of $A_2O$ and $WO_3$ in the catalyst. The advantages of