Summary

[0015a] In one aspect, the present disclosure refers to a process for the preparation of methyl mercaptan, comprising at least the following steps:

a) a carbon oxide, hydrogen sulphide and hydrogen undergo a reaction in the presence of a zirconia-supported molybdenum- and potassium-based catalyst; said catalyst not comprising a promoter,

b) the carbonyl sulphide obtained in step a) undergoes a hydrogenation reaction in the presence of said hydrogen (H_2), to form methyl mercaptan (CH_3SH) and hydrogen sulphide (H_2S),

c) optionally, said hydrogen sulphide (H_2S) formed in step b) is recycled to step a), and

d) the methyl mercaptan is collected.

[0015b] In another aspect, the present disclosure refers to a use of a catalyst disclosed herein, for producing methyl mercaptan from carbon oxide, hydrogen sulphide and hydrogen.

Description

[0016] Thus, the present invention relates to a perfecting of the production of methyl mercaptan ("CH_3SH" or more simply "MeSH") from gaseous mixtures enclosing at least one carbon oxide, hydrogen and hydrogen sulphide.

[0017] It has now been discovered in a surprising manner that this perfecting can be obtained thanks to the catalyst according to the invention, which is a zirconia-supported molybdenum- and potassium-based catalyst.

[0018] The catalyst according to the invention is easier to prepare, in particular since the presence of a promoter is not essential. Moreover, the catalyst according to the invention is also less expensive than those known in the prior art. Finally, the catalyst according to the invention results in an improved conversion of carbon oxide, in particular of carbon monoxide, and an improved selectivity to methyl mercaptan.

According to one preferred embodiment, the catalyst according to the invention is a zirconia-supported molybdenum- and potassium-based catalyst that does not comprise a promoter. According to one embodiment, the catalyst according to the invention comprises zirconia-supported potassium and molybdenum oxides, and does not comprise a promoter. According to another embodiment, the catalyst according to the invention is constituted by zirconia-supported potassium and molybdenum oxides.

[0019] Thus, according to a first object, the present invention relates to a process for preparing methyl mercaptan, said process comprising at least the following steps:

a) a carbon oxide, hydrogen sulphide (H_2S) and hydrogen (H_2) undergo a reaction in the presence of a zirconia-supported molybdenum- and potassium-based catalyst,

b) the carbonyl sulphide obtained in step a) undergoes a hydrogenation reaction in the presence of said hydrogen (H_2), to form methyl mercaptan (CH_3SH) and hydrogen sulphide (H_2S),

c) optionally, said hydrogen sulphide (H_2S) formed in step b) is recycled to step a), and

d) the methyl mercaptan is collected.

[0020] Thus, more particularly, the present invention relates to a process for preparing methyl mercaptan, said process comprising at least the following steps:

a) a carbon oxide, hydrogen sulphide (H_2S) and hydrogen (H_2) undergo a reaction in the presence of a zirconia-supported molybdenum- and potassium-based catalyst, said catalyst not comprising a promoter, to form carbonyl sulphide,

b) the carbonyl sulphide obtained in step a) undergoes a hydrogenation reaction in the presence of said hydrogen (H_2), to form methyl mercaptan (CH_3SH) and hydrogen sulphide (H_2S), said hydrogen sulphide originating from the hydrolysis of carbonyl sulphide, this hydrolysis being carried out with the water formed during the hydrogenation of carbonyl sulphide,

c) optionally, said hydrogen sulphide (H_2S) formed in step b) is recycled to step a), and