the reactor for the production of methyl mercaptan from methanol and H_2S. The extraction according to the disclosure is also not aimed at the recovery or recycling of the majority of the unreacted H_2S. The process according to the disclosure is directed toward recovering the sulfur compounds present in the gaseous vents, which are usually incinerated and responsible for the release of sulfur dioxide.

Thus, the process according to the disclosure notably does not involve an amount of methanol for said extraction greater than the amount of methanol required for the synthesis of the methyl mercaptan. On the contrary, the extraction according to the disclosure can easily be integrated into a methyl mercaptan production unit since it treats only the gaseous vents. It therefore consumes little energy and uses a simple device.

Said extraction also makes it possible to reduce the amount of vent gases to be treated by incineration and makes it possible to greatly reduce the release of sulfur dioxide into the atmosphere.

The process for producing methyl mercaptan according to the disclosure is thus more economical and has better productivity, while at the same time being more environmentally friendly.

The present disclosure relates to a process for producing methyl mercaptan, comprising the following steps:

A) methanol is reacted with hydrogen sulfide to form a stream (M), preferably in gaseous form, comprising methyl mercaptan, unreacted H_2S and possibly sulfur byproducts;

B) optionally, said stream (M) is condensed;

C) at least one step of purification of said stream (M) is performed to obtain a stream enriched in methyl mercaptan;

D) the gaseous vents resulting from said at least one purification step are recovered, said gaseous vents comprising at least one sulfur compound, preferably H_2S;

E) a gas-liquid extraction of said at least one sulfur compound (present in said vent gases), preferably H_2S, is performed with liquid methanol so as to obtain a liquid methanol enriched in sulfur compound(s), preferably in H_2S; and

F) optionally, said enriched methanol is used as reagent for the reaction of step A).

In one aspect, the present disclosure refers to a process for producing methyl mercaptan, comprising the following steps:

A) methanol is reacted with hydrogen sulfide to form a stream (M), preferably in gaseous form, comprising methyl mercaptan, unreacted H_2S and possibly sulfur byproducts;

B) optionally, said stream (M) is condensed;

C) at least one step of purification of said stream (M) is performed to obtain a stream enriched in methyl mercaptan;

D) the gaseous vents resulting from said at least one purification step are recovered, said gaseous vents comprising at least one sulfur compound, preferably H_2S;

E) a gas-liquid extraction of said at least one sulfur compound, preferably H_2S, is performed with liquid methanol so as to obtain a liquid methanol enriched in sulfur compound(s), preferably in H_2S; and

F) optionally, said enriched methanol is used as reagent for the reaction of step A);

in which the mass ratio of the gaseous vents relative to methanol in step E) is between 0.001 and 0.5.

In particular, the gaseous vents comprise H_2S, methyl mercaptan and possibly sulfur byproducts so as to obtain, following step E), a methanol enriched in H_2S, methyl mercaptan and possibly sulfur byproducts.

CLAIMS

1. A process for producing methyl mercaptan, comprising the following steps:

A) methanol is reacted with hydrogen sulfide to form a stream (M), preferably in gaseous form, comprising methyl mercaptan, unreacted H_2S and possibly sulfur byproducts;

B) optionally, said stream (M) is condensed;

C) at least one step of purification of said stream (M) is performed to obtain a stream enriched in methyl mercaptan;

D) the gaseous vents resulting from said at least one purification step are recovered, said gaseous vents comprising at least one sulfur compound, preferably H_2S;

E) a gas-liquid extraction of said at least one sulfur compound, preferably H_2S, is performed with liquid methanol so as to obtain a liquid methanol enriched in sulfur compound(s), preferably in H_2S; and

F) optionally, said enriched methanol is used as reagent for the reaction of step A);

in which the mass ratio of the gaseous vents relative to methanol in step E) is between 0.001 and 0.5.

2. The process for producing methyl mercaptan according to claim 1, in which, during step C), at least one phase separation step is performed, preferably by decantation, and/or at least one purge is performed.

3. The process for producing methyl mercaptan according to either of the preceding claims, in which the mass ratio of the gaseous vents relative to methanol in step E) is between 0.005 and 0.1.

4. The process for producing methyl mercaptan according to any one of the preceding claims, in which the gas-liquid extraction is performed at a temperature of between 0°C and 80°C, for example between 5°C and 80°C, preferably between 10°C and 80°C, more preferentially between 20°C and 70°C.

5. The process for producing methyl mercaptan according to any one of the preceding claims, in which the gas-liquid extraction is performed at a pressure of between 4 and 60 bar absolute, preferably between 10 and 50 bar absolute.

6. The process for producing methyl mercaptan according to any one of the preceding claims, in which said enriched methanol is used as reagent for the reaction of step A) as a mixture with fresh methanol.

7. The process for producing methyl mercaptan according to any one of the preceding claims, in which said enriched methanol comprises between 0.1% and 20% by weight of H_2S, preferably between 1% and 10% by weight of H_2S, more preferentially between 1% and 5% by weight of H_2S, relative to the total weight of the enriched methanol.

8. The process for producing methyl mercaptan according to any one of the preceding claims, in which said gaseous vents comprise H_2S, methyl mercaptan, inert compounds, possibly water and sulfur byproducts such as dimethyl sulfide and dimethyl disulfide.

9. The process for producing methyl mercaptan according to any one of the preceding claims, in which the gas-liquid extraction is performed in at least one absorption column or in at least one tank, preferably with mechanical stirring.