

ALIEN PROPERTY CUSTODIAN

METHOD OF WET GAS PURIFICATION

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The invention relates to the removal of acid impurities as carbonic acid, hydrogen sulphide, hydrocyanic acid or the like from gases as for instance coal distillation gas by scrubbing the gas with aqueous solutions of organic matters and vivifying the fouled scrubbing solution by driving off the absorbed matters.

The invention consists in that an aqueous solution of such derivatives of the γ -piperidone in which the imine- and keto-group contain no substitute, such as 2,2,6,6,-tetramethyl-4, oxo-piperidine or the oximes thereof is used for the gas purification.

The compounds used for the absorption of acid impurities from gases according to the invention belong to the type of those compounds in which a hydrogen atom of the piperidone ring in para-position relatively to the imine radical is replaced by a keto-radical.

It was found that such compounds have the property to add inorganic acid compounds of the type described above in such a loose combination that the absorbed matters may be reformed without a decomposition by a reduction of pressure (vacuum) or an increase of temperature or preferably by applying both measures simultaneously.

It is known that triacetoneamine and analogous derivatives of the γ -piperidone add hydrocyanic acid under formation of nitrils which can be hydrolyzed to the oxo-acids. But it was not known up to now that hydrocyanic acid and triacetoneamine form a loose addition-compound—it is open to doubt whether that is nitril or not—which can be easily decomposed in its components, leaving the triacetoneamine unchanged. The absorbents used according to the invention as for instance triacetoneamine remain unchanged in the liquor after the absorbed acid compounds have been driven there-off.

It is further known that acid inorganic compounds may be washed out of gases with liquors containing organic bases the structure of which shows several nitrogen atoms (polyamines) and which are revived by heating up.

These known methods show, however, the disadvantage that the basic organic matters used

for the absorption polymerize comparatively easily and attack also the usual iron apparatus considerably.

The derivatives of the γ -piperidone are, however, cyclic bodies and very stable against polymerization so that a disadvantageous formation of resins does not occur. The triacetoneamine and similar matters are also not attacked by oxygen which is present for instance in coal distillation gases to a considerable extent. Finally when performing the process according to the invention in the commonly used iron apparatus practically no corrosion occurs. This may be due to the fact that the hydroxyl- and carboxyl groups which are mainly the causes of corrosion lack in the triacetoneamine.

For practising the process according to the invention one may use the common gas scrubber and the blow-over still as usual in the coking industry. The actifying stage may preferably be carried out in a column apparatus and the temperature of the liquor treated may be increased to 60–80 degrees Centigrade therein. In any case the temperature must remain below the boiling point of the triacetoneamine in order to avoid losses of the valuable absorbents. It may be advantageous to arrange a contrivance behind the gas scrubber and the blow-over still which contrivance is suitable for retaining the absorbents from the vapours developed.

The scrubbing of the gas with the absorbents preferably takes place at a temperature between 20–30 degrees Centigrade. The absorbing means may circulate through the gas treating stage and the actifying stage of the process, suitable means for heating and cooling the circulating liquor being provided for.

Instead of triacetoneamine according to the invention also oximes formed by the reaction of this compound with hydroxylamine may be used. It is also possible to substitute the methyl-group of the triacetoneamine by ethyl-groups or other suitable radicals. This refers also to the introduction of substitutes in the 3- and 5-position.

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