MANUFACTURE OF ESTERS OF THE BORNEOLS

Our invention refers to the manufacture of esters of the borneols (isoborneol and borneol) from camphene in the presence of catalytic acids.

It is known that camphene can be transformed into isoborneol esters admixed with borneol esters by means of fatty acids, for example acetic acid, when using as catalysis strong mineral acids (for example sulphuric acid, nitric acid or hydrochloric acid) and that the corresponding alcohols can be obtained therefrom by saponification. The esters obtained are, however, not pure because strong mineral acids in secondary reaction attack both the camphene and the esters. This affects both the purity and the yield of isoborneol.

Esters of substantially greater purity and from them isoborneol of substantially higher melting point can be obtained when according to this invention there is employed, in place of mineral acids, acids of less acidity, such as pyrophosphoric acid.

The attachment of the fatty acids takes place both more quickly and more completely when they are added in quantities which are in excess of that theoretically necessary. The same object may also be obtained by the use of highly concentrated fatty acids.

The reaction takes place extraordinarily quickly.

The fatty acids employed can be recovered easily and quantitatively from the wash waters by evaporation and heating.

The invention is illustrated in the following example, the parts being by weight:

10 parts of camphene are well stirred with 20 parts of 95% formic acid and 2 parts of pyrophosphoric acid and heated to about 60° C. The temperature rises of itself to about 70° C., care being taken that this temperature is not exceeded. The reaction is completed in a few minutes. The excess of formic acid is then distilled off in vacuo and the product of the reaction washed with water until neutral. The pyrophosphoric acid can easily be recovered from the wash water by evaporation. The ester has a saponification value of about 308, corresponding to 100% isoborneol formate and a specific gravity of 1.010 at 20° C.

The product obtained has the formula C₇H₁₃O₂CH₃. We wish it to be understood that the production of the said esters is not limited to the exact proportions and operations described, for obvious modifications will occur to a person skilled in the art.

We claim:

1. Process of manufacturing esters of the borneols which consists in heating highly concentrated formic acid with camphene in the presence of pyrophosphoric acid at about 60° C. and taking care that a temperature of 70° C. is not exceeded, distilling off the excess of formic acid and washing the product of the reaction.

2. Process of manufacturing esters of the borneols which consists in heating highly concentrated fatty acid with camphene in the presence of pyrophosphoric acid at about 60° C. and taking care that a temperature of 70° C. is not exceeded, distilling off the excess of the fatty acid and washing the product of the reaction.

In testimony whereof we affix our signatures.

KARL STEPHAN.

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