

PROCESS FOR THE PRODUCTION OF CYCLOHEXANEDIMETHANOL WITH
PREPONDERANCE OF THE TRANS-ISOMER

field of the invention

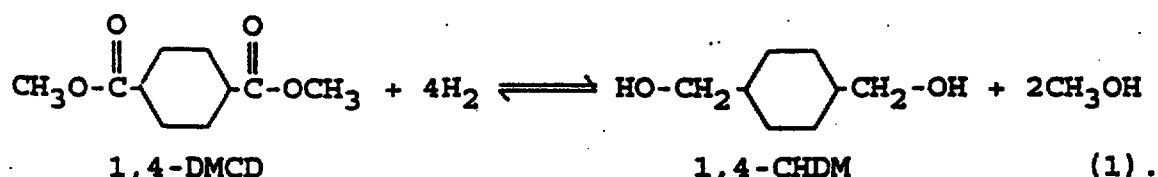
This invention relates to a process for the production of cyclohexanedimethanol, and more particularly to a process for the production of a mixture containing a major amount of the trans-isomer of cyclohexanedimethanol and a minor amount of the corresponding cis-isomer.

Background of the invention

1,4-cyclohexanedimethanol is used to prepare highly polymeric linear condensation polymers by reaction with terephthalic acid and is useful as an intermediate in the preparation of certain polyester and polyester amides. The use of 1,4-cyclohexanedimethanol for such purposes is disclosed in, for example, US-A-2901466. This document teaches that the trans-isomer of polycyclohexylene-dimethylene terephthalate has a higher melting point range (315°-320°C) than the corresponding cis-isomer (260°-267°C).

One method for preparing 1,4-cyclohexanedimethanol (hexahydroterephthalyl alcohol) involves the hydrogenation of diethyl 1,4-cyclohexanedicarboxylate (diethyl hexahydroterephthalate) in a slurry phase reactor in the presence of a copper chromite catalyst at a pressure of 3000 psia (about 206.84 bar) and a temperature of 255°C, as is described in Example 3 of US-A-2105664. The yield is said to be 77.5%.

The hydrogenation of dimethyl 1,4-cyclohexanedicarboxylate (DMCD) to 1,4-cyclohexanedimethanol (CHDM) is shown below in equation (1):-



The two geometrical isomers of CHDM thus produced are:

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ABSTRACT

A process is described for the production of cyclohexanedimethanol in which a vaporous feed stream of a hydrogen-containing gas and a hydrogenatable material comprising a dialkyl cyclohexanedicarboxylate is supplied to a hydrogenation zone containing a charge of a granular heterogeneous ester hydrogenation catalyst at a feed temperature which is in the range of from about 150°C to about 350°C and which is above the dew point of the feed stream and at a feed pressure in the range of from about 150 psia (about 10.34 bar) to about 2000 psia (about 137.90 bar), while maintaining hydrogenation conditions in the hydrogenation zone which are effective to maintain the reaction mixture in contact with the hydrogenation catalyst above its dew point.

In this process it is preferred to use dimethyl 1,4-cyclohexanedicarboxylate to produce 1,4-cyclohexanedimethanol.

FIGURE 1