

Title: PROCESS FOR PRODUCING ACETIC ACID AND DIMETHYL ETHER USING A ZEOLITE CATALYST

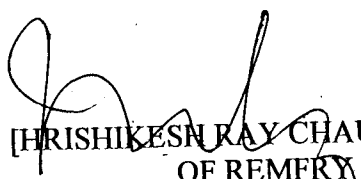
Abstract: A process for the production of acetic acid and dimethyl ether by contacting methanol and methyl acetate with a catalyst composition at a temperature in the range 140 to 250 °C wherein the catalyst composition contains a zeolite having a 2-dimensional channel system comprising at least one channel which has a 10-membered ring.

Claims:

1. A process for the production of acetic acid and dimethyl ether in which process methanol and methyl acetate are contacted with a catalyst composition in a reaction zone at a temperature in the range 140 to 250 °C to produce acetic acid and dimethyl ether and wherein said catalyst composition comprises a zeolite which has a 2-dimensional channel system comprising at least one channel having a 10-membered ring.
2. A process according to claim 1 wherein the zeolite further comprises at least one channel having an 8-membered ring.
3. A process according to claim 1 or claim 2 wherein the 2-dimensional channel system comprises inter-connecting channels
4. A process according to claim 1 wherein the zeolite is selected from zeolites having framework structure types FER, HEU, MFS, DAC, STI, NES, MWW and TER.
5. A process according to claim 4 wherein the zeolite is selected from zeolites having a framework structure type FER, HEU and MFS.
6. A process according to claim 5 wherein the zeolite is selected from ferrierite, ZSM-35, ZSM-57 and clinoptilolite.
7. A process according to any one of claims 1 to 6 wherein the zeolite is used in the acid form.
8. A process according to any one of claims 1 to 7 wherein the zeolite has an alkali and alkaline earth metal content in a total amount in the range 0 to 0.2% by weight of the zeolite.
9. A process according to any one of claims 1 to 8 wherein the zeolite has a silica : alumina ratio in the range 5 to 90 : 1.
10. A process according to claim 9 wherein the silica : alumina ratio in the range 15 to 60 : 1.
11. A process according to any one of claims 1 to 10 wherein the catalyst composition comprises at least one inorganic oxide binder.
12. A process according to claim 11 wherein the binder is present in an amount in the range 10 wt% to 90 wt% (based on the total weight of zeolite and binder)
13. A process according to any one of claims 1 to 12 wherein the molar ratio of methanol : methyl acetate is in the range 1: 0.1 to 1:10.

14. A process according to any one of claims 1 to 13 wherein the process is operated in the liquid or vapour phase.
15. A process according to claim 14 wherein the process is operated in the vapour phase at a temperature of 175 to 240 °C.
16. A process according to claim 14 wherein the process is operated in the liquid phase at a temperature of 160 to 190 °C.
17. A process according to any one of claims 1 to 16 wherein water is added to the reaction zone.
18. A process according to claim 1 wherein the process is operated in the vapour phase at a temperature in the range 175 to 220 °C, water is added to the reaction zone and wherein the zeolite further comprises at least one channel having an 8-membered ring and is in the acid form.
19. A process according to claim 18 wherein the process is operated at a gas hourly space velocity (GHSV) in the range 2 to 25,000 h⁻¹.
20. A process according to claim 1 wherein the process is operated in the liquid phase at a temperature in the range 160 to 190 °C, water is added to the reaction zone and wherein the zeolite further comprises at least one channel having an 8-membered ring and is in the acid form.
21. A process according to claim 20 wherein the process is operated at a liquid hourly space velocity (LHSV) in the range 2 to 8 h⁻¹.
22. A process according to any one of claims 1 to 21 wherein the dimethyl ether produced is used as the feedstock to a process for the carbonylation of dimethyl ether.

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