DEHYDRODIMERIZATION OF METHANE ON METAL SULFIDES

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UDC 542.97:547.211

Methane reacts with metal oxides at $800-900^{\circ}$ C with ethylene as one of the products [1]. We have discovered that passing methane (P $\simeq 0.1$ MPa) at a volumetric rate of 500-2000 h⁻¹ through a bed of FeS, CdS, Cu₂S, or PbS at $800-900^{\circ}$ C in the absence of oxygen gives 3-5% conversion of this compound to ethylene and propylene, whose yields are 98 and 2%, respectively, relative to the amount of gas consumed. Partial desulfurization of the sulfide with the formation of H₂S occurs concurrently. It has been previously established that the ethylene yield in the presence of quartz as the reactor material is less than 0.5%. In these experiments, we used methane corresponding to TU 51-841-87 not containing traces of 0_2 as indicated by gasliquid chromatography.

LITERATURE CITED

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