HYDROGENATION OF α-METHYLFURAN OVER RHODIUM ON IONIC SUPPORTS

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It was found that rhodium deposited on calcium fluoride is an exceptionally selective and active catalyst for the hydrogenation of α-methylfuran (see Table 1).

The method for the preparation of catalysts on ionic supports was previously described in [1]. The catalysts tested were (0.5% Rh) Rh/KCl, Rh/NaF, and Rh/CaF_2. The results of the investigation are presented in Table 1. The catalyst samples (10 mg) were tested with a pulse microcatalytic apparatus under the following conditions: $P_{H_2} = 1.5$ atm, $V_{H_2} = 40$ ml/min, and a contact time of 0.1 sec.

It follows from the data in Table 1 that 0.5% Rh/CaF_2 proved to be an exceptionally selective catalyst for the hydrogenation of α-methylfuran to α-methyltetrahydrofuran: The activity of this catalyst corresponds approximately to that of 10% Rh/C [2], but it is much more selective than the latter, inasmuch as it absolutely does not catalyze hydrogenolysis over the investigated temperature range. This study demonstrated the high stability of this catalyst.

TABLE 1. Yields of α-Methyltetrahydrofuran (MTHF) in the Hydrogenation of α-Methylfuran in the Presence of Various Catalysts

Temperature, °C	Support		
	NaF	KCl	CaF_2
100	40% MTHF	15% MTHF	70% MTHF
150	—	10% MTHF	30% MTHF
200	5% MTHF		
250	—	1% MTHF, traces of ketones	30% MTHF
300	1% MTHF, traces of ketones	—	20% MTHF —
320	—	—	10% MTHF

LITERATURE CITED

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