

Ex. 2004

As described in Comparative Example 10 of the '048 patent (*see* **Ex. 1001** at p. 23, col. 28, ll. 51-67; **Ex. 1004** at pp. 62-63 of 617; **Ex. 1005** at pp. 42-43 of 236), bio-1-octanol was fed into a 75 mL reactor packed with a silanized γ -alumina catalyst that was prepared by the following procedure: γ -alumina powder was modified with a sodium hydroxide solution (5 wt-% NaOH), and then dried in an oven. This second catalyst was then treated with diethoxydiphenylsilane dissolved in ethanol (to provide a loading of 1 wt-% based on alumina). The solvent was then removed, the silanized catalyst was washed with ethanol, and then dried in an oven to create a third catalyst. This third catalyst was calcined at 400 °C for 12 h.

The silanized γ -alumina catalyst was loaded into a 75 mL reactor, heated to a temperature of 325-335 °C. Bio-1-octanol was flowed into the reactor and the products were collected. A series of runs were conducted in which the bio-1-octanol pump rate was adjusted to optimize conversion and/or 1-octene regioselectivity. The pump rate, temperature, conversion, and 1-octene regioselectivity for the 16 runs are summarized in the following Table:

Run	Pump rate (mL/min)	Conversion (%)	Regioselectivity (%)
1	0.10	98	61
2	0.20	97	73
3	0.50	95	85
4	0.50	93	89
5	0.52	89	92
6	0.52	87	90
7	0.52	85	94

8	0.52	62	97
9	0.55	76	96
10	0.62	44	98
11	0.62	43	98
12	0.75	33	98
13	0.75	32	98
14	0.75	29	98
15	1.0	63	97
16	2.0	11	97