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APPENDICES

Appendix A Hydrogenolysis of ethylbenzene

Table A1 Hydrogenolysis of ethylbenzene at 500°C, 50 psi, H₂/EB ratio of 4, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	13097	8421	16004
2	17522	11028	22862
3	16103	10311	23427
4	14456	9029	22019
5	15326	9751	25815
6	15295	9700	25800

Table A2 Hydrogenolysis of ethylbenzene at 450°C, 50 psi, H₂/EB ratio of 4, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	20093	21180	44500
2	19995	21500	52850
3	17471	17635	45000
4	19723	20631	56892
5	20830	22490	60324
6	18232	18590	51789

Table A3 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 4, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	5224	10865	88984
2	4567	8834	96334
3	4362	7974	96930
4	4841	8843	117408
5	4579	8127	110772
6	4450	7850	110300

Table A4 Hydrogenolysis of ethylbenzene at 500°C, 50 psi, H₂/EB ratio of 4, and LHSV of 3 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	127	121	470
2	80	72	310
3	262	242	1123
4	345	309	1567
5	149	137	713
6	155	143	758

Table A5 Hydrogenolysis of ethylbenzene at 500°C, 50 psi, H₂/EB ratio of 4, and LHSV ratio of 4 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	9622	9058	54678
2	8805	8555	52345
3	7608	7582	48000
4	8748	8624	56893
5	5098	5115	35098
6	4904	5001	34890

Table A6 Hydrogenolysis of ethylbenzene at 450°C, 50 psi, H₂/EB ratio of 4, and LHSV of 3 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	12401	13998	39820
2	12389	14129	44512
3	12100	14111	47689
4	11897	13492	48722
5	11991	13920	47829
6	11889	13900	47890

Table A7 Hydrogenolysis of ethylbenzene at 450°C, 50 psi, H₂/EB ratio of 4, and LHSV of 4 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	9539	11872	43254
2	9002	11092	42312
3	8997	11034	42509
4	10388	12489	53210
5	9234	11592	46532
6	8921	10934	45390

Table A8 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 4, and LHSV of 3 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	2564	10244	167610
2	1561	5211	172262
3	1282	4003	168458
4	1189	3700	146729
5	1150	3578	150020
6	1290	3782	167229

Table A9 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 6, and LHSV ratio of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	4155	10893	92616
2	5281	8469	97647
3	3389	8459	113489
4	2502	5890	75896
5	2840	6643	95763
6	2750	6471	91273

Table A10 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	7698	27 865	245611
2	7261	25678	267590
3	6989	22679	267544
4	6571	20098	264390
5	6002	18902	248792
6	5897	17839	239800

Table A11 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 10, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	3574	12711	120032
2	2653	9430	103966
3	2813	9783	129833
4	2761	8972	134022
5	2320	7493	100283
6	5192	16788	228790

Table A12 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 2 h⁻¹ over the synthesized Ni/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	130619	75905	49825
2	69114	71807	80866
3	64932	77290	84010
4	64690	80300	81018
5	55855	68225	56121

Table A13 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 2 h⁻¹ over the synthesized Mo/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	2154	2781	122218
2	1043	1279	110808
3	828	968	100120
4	825	842	98185
5	714	704	84726

Table A14 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 6 h⁻¹ over the synthesized Ni/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	36707	32981	75446
2	31243	34592	77507
3	26962	37842	88985
4	19614	28973	65251
5	18999	32212	73809

Table A15 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 10 h⁻¹ over the synthesized Ni/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	19524	24736	85514
2	13921	22637	79174
3	11721	23984	91865
4	8827	20098	81132
5	7736	19323	82833

Table A16 Hydrogenolysis of ethylbenzene at 400°C, 50 psi, H₂/EB ratio of 8, and LHSV of 14 h⁻¹ over the synthesized Ni/Al₂O₃ catalyst

Time on Stream (h)	Area		
	Benzene	Toluene	Ethylbenzene
1	8276	15234	79252
2	5603	11982	83179
3	5272	12387	84159
4	4290	10345	70491
5	4124	11782	79509

Appendix B Hydrogenolysis of *p*-MEB

Table B1 Hydrogenolysis of *p*-MEB at 400°C, 50 psi, H₂/*p*-MEB ratio of 8, and LHSV of 2 h⁻¹ over the commercial NiMo/Al₂O₃ catalyst

Time on Stream (h)	Area			
	<i>p</i> -Xylene	Toluene	Ethylbenzene	<i>p</i> -MEB
1	15032	6867	5266	103891
2	4857	2043	1919	45219
3	3235	1481	1313	33902
4	2238	1077	939	22671
5	2191	1127	939	25612
6	1836	956	798	21451

Table B2 Hydrogenolysis of *p*-MEB at 400°C, 50 psi, H₂/*p*-MEB ratio of 8, and LHSV of 14 h⁻¹ over the synthesized Ni/Al₂O₃ catalyst

Time on Stream (h)	Area				
	<i>p</i> -Xylene	Toluene	ethylbenzene	Benzene	<i>p</i> -MEB
1	7988	17638	3688	4689	65840
2	7007	12633	2950	2884	55233
3	6790	10186	2466	1967	53587
4	6547	8498	2234	1389	54333
5	6985	7976	2009	1273	55732
6	5998	7392	2145	1009	57632

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