

APPENDIX A

FIXED BED REACTION DATA

Co.068 - Run #2

Co wt%	NM wt %	Promotor wt%	Support
20	Pd 1.00		Al ₂ O ₃

SUMMARY REACTION DATA

Reaction Conditions:

P = 1.0 atm

T = 220 °C

H₂/CO = 2

weight of catalyst = 0.201 g

WHSV = 12.80 1/hr

time on stream = 23.5 hrs

CO₂ (% of CO) =

O/P = 0.01

0.00

CO conversion (%)	4.5
rate (g CH ₂ /g cat/hr)	0.25
alpha	0.61
C1 (wt%)	31.4
C2 - C4 (wt%)	32.0
C5 - C12 (wt%)	35.1
C13 + (wt%)	1.4

Performance of Co.068

Dates: 07/06/95 - 01/00/00 Run #2

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	2.5	5.5	8.5	11.5	14.5	17.5
reaction temperature, °C	220	220	220	220	220	220
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	90.0	90.0

C1 - C15 product distribution, weight %

C1	30.58	30.77	31.08	30.88	31.01	31.12
C2	6.22	6.16	6.20	6.15	6.15	6.15
C3	13.07	12.90	13.07	12.96	13.06	13.07
C4	13.79	13.36	13.35	13.36	13.36	13.29
C5	12.53	12.05	12.03	12.12	12.11	12.02
C6	8.09	8.75	8.54	8.67	8.65	8.60
C7	5.45	5.52	5.37	5.42	5.42	5.38
C8	3.47	3.37	3.43	3.47	3.40	3.46
C9	2.14	2.10	2.14	2.28	2.15	2.22
C10	1.40	1.34	1.47	1.43	1.42	1.39
C11	0.90	0.90	0.88	0.88	0.89	0.90
C12	0.62	0.61	0.56	0.58	0.58	0.59
C13	0.37	0.55	0.34	0.34	0.33	0.36
C14	0.27	0.24	0.24	0.24	0.23	0.24
C15	0.24	0.20	0.20	0.19	0.20	0.20
alpha chain growth probability	0.61	0.60	0.60	0.60	0.60	0.60

C1 - C50 estimated total product distribution, weight %

C1	30.4	30.9	31.1	30.9	31.0	31.2
C2 - C4	32.9	32.5	32.7	32.5	32.6	32.6
C5 - C12	35.0	35.2	34.9	35.2	35.0	35.0
C13 - C50	1.6	1.4	1.3	1.3	1.3	1.3

CO conversion, %	5.0	4.6	4.7	4.6	4.6	4.6
rate, g CH ₂ /g cat/hr	0.28	0.26	0.26	0.26	0.26	0.26
CO ₂ formation, %						

Performance of Co.068

Dates: 07/06/95 - 01/00/00 Run #2

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	20.5	23.5	26.5	29.5	32.5	35.5
reaction temperature, °C	220	220	220	240	240	240
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	120.0	120.0	120.0	120.0
C1 - C15 product distribution, weight %						
C1	31.10	31.41	33.85	54.34	53.82	53.29
C2	6.16	6.11	6.69	8.93	8.79	8.72
C3	13.13	12.87	13.76	13.16	13.27	13.44
C4	13.29	13.01	13.14	10.50	10.42	10.56
C5	12.03	11.83	11.25	6.40	6.81	6.93
C6	8.57	8.47	9.43	3.25	3.45	3.54
C7	5.42	5.59	4.58	1.57	1.68	1.76
C8	3.41	3.59	2.73	0.83	0.89	0.87
C9	2.13	2.20	1.72	0.43	0.39	0.40
C10	1.47	1.47	0.92	0.18	0.20	0.21
C11	0.85	0.93	0.54	0.08	0.08	0.09
C12	0.59	0.57	0.30	0.11	0.04	0.05
C13	0.35	0.36	0.21	0.03	0.03	0.02
C14	0.23	0.24	0.14	0.01	0.01	0.01
C15	0.20	0.21	0.11	0.01	0.01	0.01
alpha chain growth probability	0.60	0.61	0.57	0.48	0.44	0.45
C1 - C50 estimated total product distribution, weight %						
C1	31.1	31.4	33.8	54.4	53.9	53.3
C2 - C4	32.6	32.0	33.6	32.6	32.5	32.7
C5 - C12	34.9	35.1	31.8	12.9	13.6	13.9
C13 - C50	1.4	1.4	0.8	0.1	0.0	0.0
CO conversion, %	4.7	4.5	3.9	9.8	9.0	8.8
rate, g CH ₂ /g cat/hr	0.27	0.25	0.22	0.55	0.50	0.49
CO ₂ formation, %						

Performance of Co.068
 Dates: 07/06/95 - 01/00/00 Run #2

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	38.5	41.5	44.5	48.8	51.8	54.8
reaction temperature, °C	240	240	240	240	240	240
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	120.0	120.0	120.0	120.0	120.0	120.0
C1 - C15 product distribution, weight %						
C1	52.89	52.63	52.16	52.13	51.67	50.93
C2	8.68	8.64	8.59	8.57	8.52	8.45
C3	13.57	13.68	13.80	13.86	13.94	14.12
C4	10.62	10.69	10.78	10.79	10.84	11.01
C5	7.01	7.06	7.17	7.18	7.26	7.44
C6	3.60	3.63	3.71	3.75	3.82	4.03
C7	1.76	1.79	1.87	1.85	1.89	1.99
C8	0.94	0.91	0.94	0.94	1.00	1.05
C9	0.43	0.45	0.46	0.42	0.47	0.42
C10	0.22	0.23	0.22	0.22	0.23	0.26
C11	0.10	0.10	0.10	0.10	0.10	0.12
C12	0.05	0.06	0.06	0.05	0.07	0.05
C13	0.02	0.03	0.03	0.03	0.03	0.03
C14	0.02	0.01	0.02	0.02	0.02	0.02
C15	0.02	0.01	0.01	0.01	0.02	0.02
alpha chain growth probability	0.44	0.45	0.45	0.44	0.46	0.44
C1 - C50 estimated total product distribution, weight %						
C1	52.9	52.7	52.2	52.2	51.7	51.0
C2 - C4	32.9	33.0	33.2	33.3	33.3	33.6
C5 - C12	14.1	14.3	14.6	14.5	14.9	15.4
C13 - C50	0.0	0.1	0.1	0.0	0.1	0.0
CO conversion, %	8.7	8.6	8.4	8.4	8.3	7.9
rate, g CH ₂ /g cat/hr	0.49	0.48	0.47	0.47	0.46	0.45
CO ₂ formation, %						

7/13/95

Performance of Co.068
 Dates: 07/06/95 - 01/00/00 Run #2

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	57.8	61.8	64.8	67.8	70.6	0.0
reaction temperature, °C	240	240	240	240	240	0
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	120.0	120.0	120.0	120.0	120.0	0.0

C1 - C15 product distribution, weight %

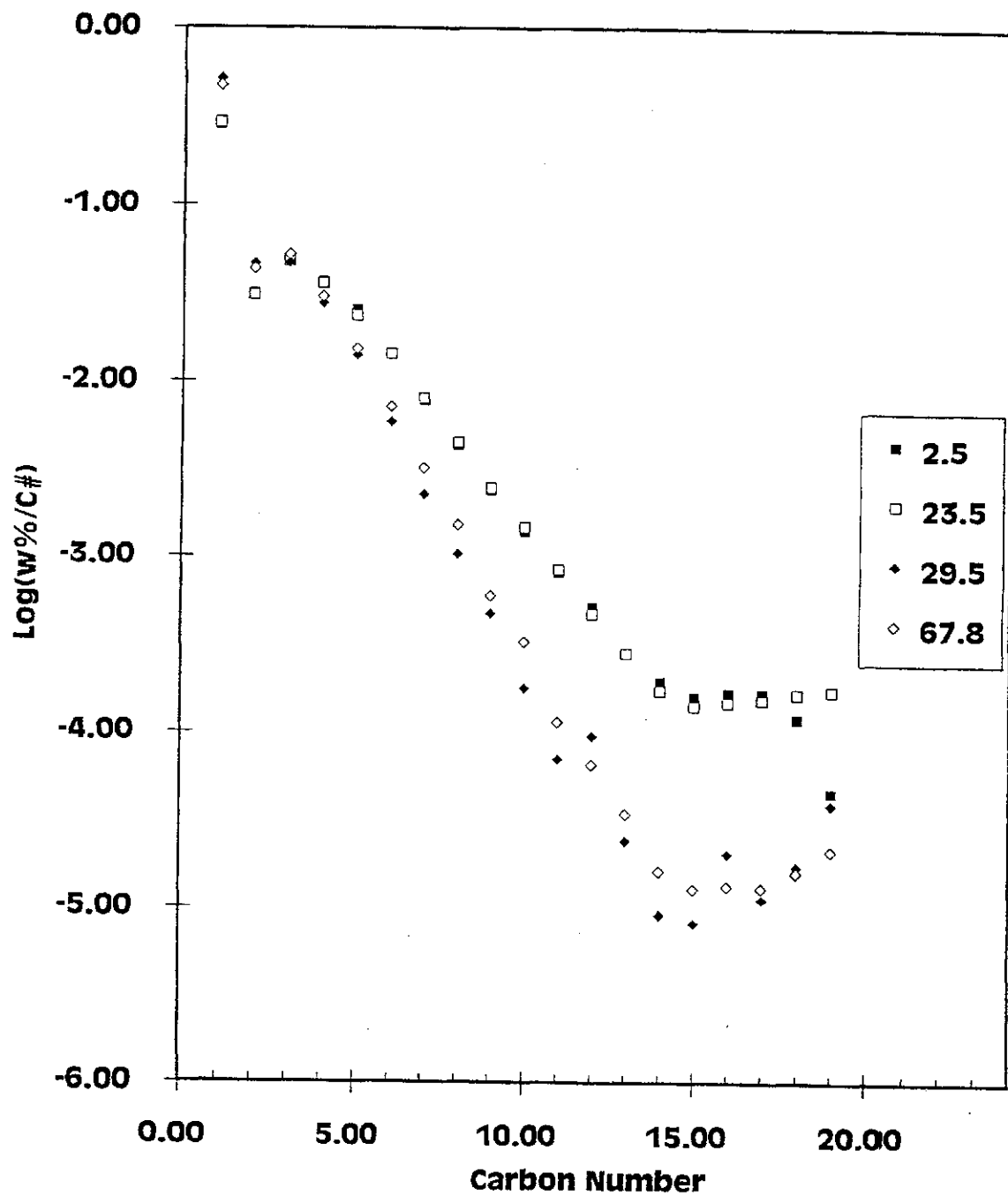
C1	50.63	50.69	51.34	49.94	55.49	0.00
C2	8.42	8.40	8.53	8.31	8.64	0.00
C3	14.22	14.18	14.58	14.30	13.17	0.00
C4	11.10	11.01	11.32	11.02	9.92	0.00
C5	7.52	7.46	7.66	7.58	6.38	0.00
C6	3.91	4.02	4.19	4.13	3.20	0.00
C7	2.02	2.01	1.13	2.22	1.56	0.00
C8	1.07	1.07	0.54	1.21	0.80	0.00
C9	0.50	0.52	0.28	0.54	0.33	0.00
C10	0.27	0.27	0.11	0.33	0.18	0.00
C11	0.11	0.12	0.08	0.13	0.08	0.00
C12	0.07	0.07	0.04	0.08	0.04	0.00
C13	0.03	0.04	0.02	0.04	0.02	0.00
C14	0.02	0.02	0.02	0.02	0.02	0.00
C15	0.02	0.02	0.02	0.02	0.02	0.00
alpha chain growth probability	0.46	0.46	0.42	0.46	0.44	0.00

C1 - C50 estimated total product distribution, weight %

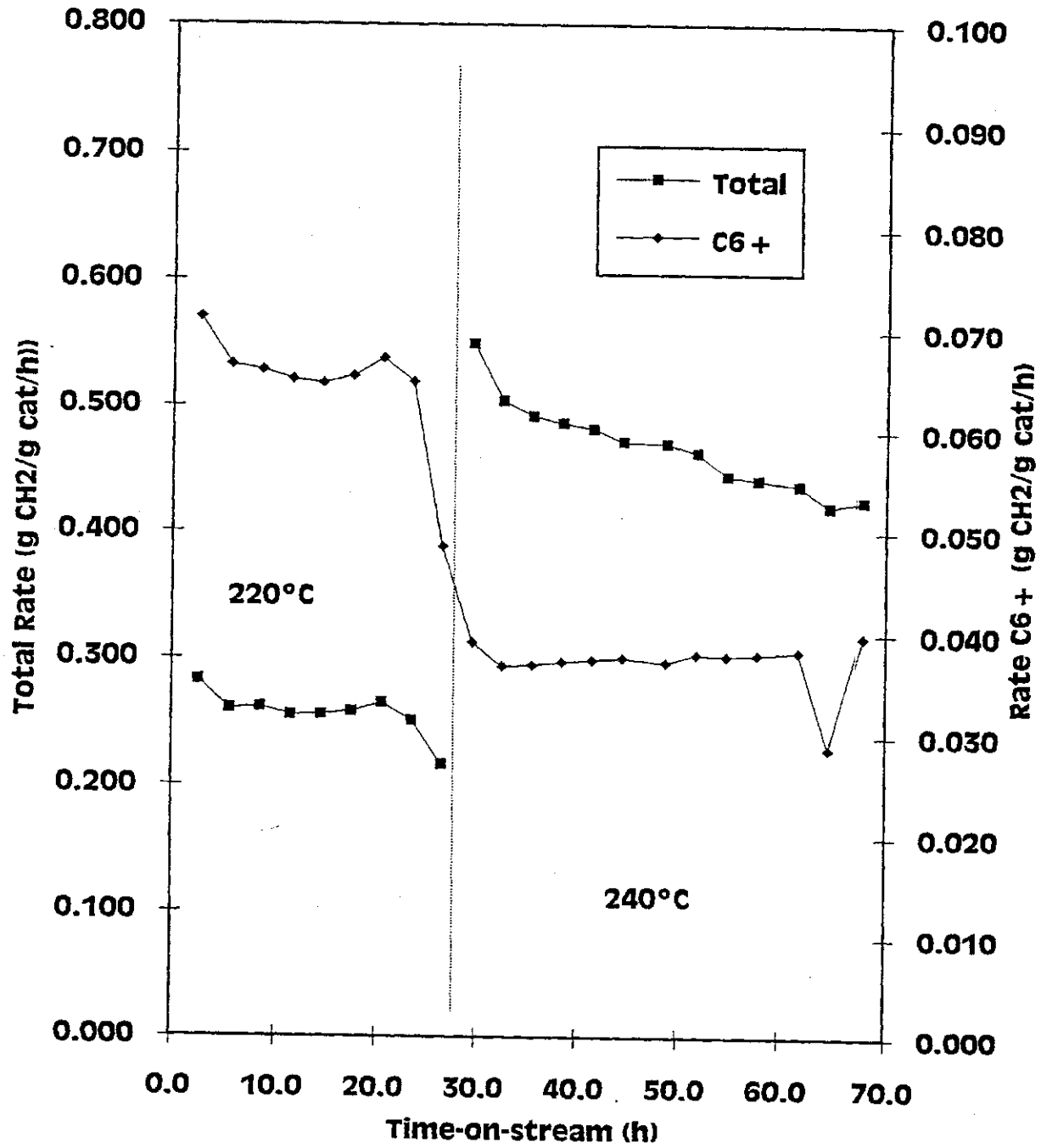
C1	50.7	50.7	51.4	50.0	55.6	0.0
C2 - C4	33.8	33.6	34.5	33.7	31.8	0.0
C5 - C12	15.5	15.6	14.0	16.3	12.6	0.0
C13 - C50	0.1	0.1	0.0	0.1	0.0	0.0

CO conversion, %	7.9	7.8	7.5	7.6	8.3	0.0
rate, g CH ₂ /g cat/hr	0.44	0.44	0.42	0.42	0.47	0.00
CO ₂ formation, %						

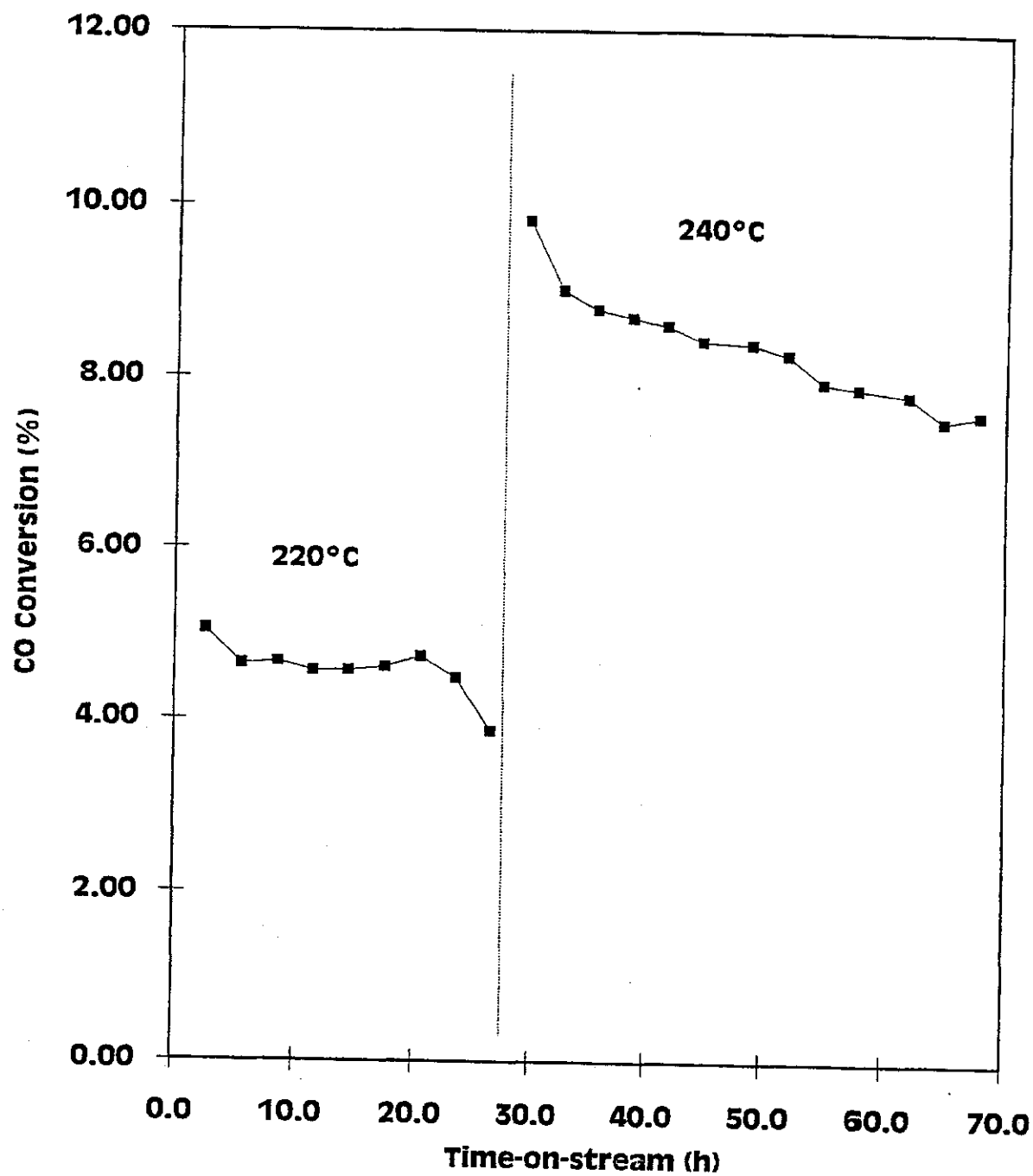
CO Hydrogenation on Co.068 - ASF Product Distribution



CO Hydrogenation on Co.068



CO Hydrogenation on Co.068



Co.068 - Run #3

Co wt%	NM wt %	Promotor wt%		Support
20		Pd	1.00	Al ₂ O ₃

SUMMARY REACTION DATA

Reaction Conditions:

P = 1.0 atm

T = 220 °C

H₂/CO = 2

weight of catalyst = 0.213 g

WHSV = 12.09 1/hr

time on stream = 23.5 hrs

CO₂ (% of CO) =

O/P = 0.03

0.00

CO conversion (%)	5.7
rate (g CH ₂ /g cat/hr)	0.30
alpha	0.63
C1 (wt%)	30.0
C2 - C4 (wt%)	29.3
C5 - C12 (wt%)	38.6
C13 + (wt%)	2.1

Performance of Co.068

Dates: 07/21/95 - 07/24/95 Run #3

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.1 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	2.5	5.5	8.5	11.5	14.5	17.5
reaction temperature, °C	220	220	220	220	220	220
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	90.0	90.0

C1 - C15 product distribution, weight %

C1	26.72	27.79	27.95	28.19	28.04	32.02
C2						
C3	5.33	5.39	5.61	5.64	5.56	5.21
C4	11.24	11.19	11.34	11.34	11.43	10.68
	12.51	12.30	12.37	12.35	12.45	11.60
C5						
C6	12.22	12.02	12.19	11.90	12.12	11.27
C7	9.54	9.60	9.45	9.16	9.40	8.75
C8	6.39	6.23	6.16	6.17	5.94	5.88
C9	4.43	4.31	4.12	4.24	4.15	4.07
C10	3.14	2.99	2.77	2.96	2.96	2.90
C11	2.18	2.08	1.92	2.06	2.03	1.97
C12	1.71	1.52	1.47	1.46	1.47	1.42
C13	1.10	1.05	1.03	1.00	1.01	0.89
C14	0.76	0.71	0.69	0.67	0.69	0.61
C15	0.54	0.52	0.50	0.48	0.46	0.46
	0.51	0.44	0.40	0.37	0.38	0.38
alpha chain growth probability	0.64	0.64	0.64	0.64	0.63	0.63

C1 - C50 estimated total product distribution, weight %

C1						
C2 - C4	27.0	28.1	28.3	28.6	28.4	32.4
C5 - C12	29.4	29.2	29.7	29.7	29.9	27.8
C13 - C50	41.1	40.3	39.7	39.5	39.6	37.7
	2.5	2.4	2.3	2.2	2.1	2.1

CO conversion, %						
rate, g CH ₂ /g cat/hr	6.0	5.9	5.6	5.6	5.3	5.6
CO ₂ formation, %	0.32	0.31	0.30	0.29	0.28	0.30

Performance of Co.068

Dates: 07/21/95 - 07/24/95 Run #3

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.1 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	20.5	23.5	26.5	29.5	32.5	35.5
reaction temperature, °C	220	220	220	260	260	260
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	120.0	120.0

C1 - C15 product distribution, weight %

C1	27.63	29.49	27.95	72.36	66.02	62.05
C2	5.44	5.68	5.50	10.83	10.38	10.08
C3	12.03	11.23	12.07	8.24	11.08	11.88
C4	11.34	11.89	11.23	4.26	6.58	7.39
C5	12.01	11.41	11.69	2.24	3.09	4.30
C6	9.36	8.81	8.99	0.97	1.51	1.98
C7	6.31	6.07	6.34	0.38	0.61	1.02
C8	4.37	4.20	4.41	0.22	0.31	0.61
C9	3.05	2.97	3.15	0.14	0.15	0.27
C10	2.14	2.08	2.17	0.08	0.07	0.14
C11	1.57	1.52	1.55	0.04	0.03	0.06
C12	1.05	0.97	1.06	0.02	0.01	0.04
C13	0.67	0.65	0.69	0.02	0.01	0.02
C14	0.47	0.47	0.48	0.01	0.01	0.01
C15	0.39	0.42	0.42	0.01	0.00	0.01
alpha chain growth probability	0.63	0.63	0.64	0.47	0.38	0.39

C1 - C50 estimated total product distribution, weight %

C1	28.1	30.0	28.5	72.5	66.0	62.1
C2 - C4	29.3	29.3	29.3	23.4	28.1	29.4
C5 - C12	40.4	38.6	40.0	4.1	5.9	8.5
C13 - C50	2.1	2.1	2.2	0.0	0.0	0.0

CO conversion, %	5.2	5.7	5.2	25.4	14.4	13.0
rate, g CH ₂ /g cat/hr	0.27	0.30	0.27	1.35	0.76	0.69
CO ₂ formation, %						

Performance of Co.068
 Dates: 07/21/95 - 07/24/95 Run #3

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.1 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	38.5	41.5	44.5	47.5	50.5	53.5
reaction temperature, °C	260	260	260	260	260	260
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	120.0	120.0	120.0	120.0	120.0	120.0
C1 - C15 product distribution, weight %						
C1	60.78	65.87	64.13	57.30	56.86	56.13
C2	9.96	9.53	9.52	9.54	9.46	9.35
C3	12.27	10.22	11.08	12.90	13.00	13.08
C4	7.78	6.23	6.67	8.51	8.63	8.76
C5	4.62	3.88	3.88	5.39	5.51	5.70
C6	2.21	2.08	2.12	2.83	2.96	3.13
C7	1.08	0.96	1.12	1.49	1.49	1.58
C8	0.59	0.51	0.61	0.81	0.83	0.89
C9	0.29	0.29	0.34	0.45	0.46	0.51
C10	0.14	0.15	0.17	0.23	0.26	0.25
C11	0.07	0.08	0.09	0.12	0.14	0.16
C12	0.05	0.05	0.06	0.09	0.08	0.09
C13	0.02	0.03	0.04	0.06	0.07	0.07
C14	0.01	0.02	0.02	0.04	0.04	0.04
C15	0.01	0.01	0.01	0.03	0.02	0.03
alpha chain growth probability	0.40	0.42	0.42	0.46	0.52	0.52
C1 - C50 estimated total product distribution, weight %						
C1	60.8	65.8	64.2	57.2	56.9	56.1
C2 - C4	30.0	26.0	27.3	30.9	31.1	31.2
C5 - C12	9.1	8.1	8.5	11.7	11.9	12.5
C13 - C50	0.0	0.1	0.1	0.2	0.2	0.2
CO conversion, %	12.0	13.2	11.0	10.0	9.6	9.2
rate, g CH ₂ /g cat/hr	0.63	0.70	0.58	0.53	0.51	0.49
CO ₂ formation, %						

Performance of Co.068
 Dates: 07/21/95 - 07/24/95 Run #3

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.1 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	56.5	59.5	62.5	65.5	68.5	71.5
reaction temperature, °C	260	260	260	260	260	260
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	120.0	120.0	120.0	120.0	120.0	120.0
C1 - C15 product distribution, weight %						
C1	55.73	56.37	55.45	54.81	54.49	54.27
C2	9.28	9.17	9.14	9.09	9.05	9.00
C3	13.19	12.99	13.19	13.25	13.27	13.24
C4	8.92	8.71	8.80	8.99	9.00	8.97
C5	5.84	5.74	5.95	6.04	6.06	6.11
C6	3.24	3.13	3.33	3.40	3.40	3.50
C7	1.60	1.63	1.75	1.81	1.86	1.90
C8	0.87	0.92	0.99	1.02	1.06	1.15
C9	0.50	0.47	0.52	0.55	0.56	0.60
C10	0.28	0.28	0.32	0.32	0.38	0.39
C11	0.18	0.14	0.16	0.19	0.23	0.23
C12	0.08	0.09	0.10	0.12	0.13	0.13
C13	0.06	0.07	0.07	0.08	0.10	0.10
C14	0.04	0.04	0.04	0.06	0.07	0.07
C15	0.02	0.03	0.02	0.03	0.04	0.04
alpha chain growth probability	0.52	0.52	0.51	0.53	0.54	0.54
C1 - C50 estimated total product distribution, weight %						
C1	55.7	56.4	55.5	54.8	54.5	54.3
C2 - C4	31.4	30.9	31.2	31.3	31.3	31.2
C5 - C12	12.7	12.6	13.2	13.6	13.9	14.2
C13 - C50	0.2	0.2	0.1	0.2	0.3	0.3
CO conversion, %	8.8	8.8	8.3	8.0	7.7	7.5
rate, g CH ₂ /g cat/hr	0.46	0.46	0.44	0.42	0.41	0.40
CO ₂ formation, %						

Co.069 - Run #1

Co wt%	NM wt %	Promotor wt%		Support
20	Ru 2.00			Al2O3

SUMMARY REACTION DATA

Reaction Conditions:

P = 1.0 atm

T = 220 °C

H₂/CO = 2

weight of catalyst = 0.200 g

WHSV = 12.86 1/hr

time on stream = 23.5 hrs

CO₂ (% of CO) =
O/P = 0.01

CO conversion (%)	5.5
rate (g CH ₂ /g cat/hr)	0.31
alpha	0.66
C1 (wt%)	29.0
C2 - C4 (wt%)	27.6
C5 - C12 (wt%)	40.3
C13 + (wt%)	3.1

Performance of Co.069

Dates: 07/17/95 - 07/18/95 Run #1

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.9 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	2.5	5.5	8.5	11.5	17.5	20.5
reaction temperature, °C	220	220	220	220	220	220
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	90.0	90.0
C1 - C15 product distribution, weight %						
C1	25.59	27.54	28.52	26.83	26.24	26.02
C2	4.46	4.90	4.85	4.73	4.67	4.47
C3	10.80	10.94	10.85	10.93	10.86	10.80
C4	11.48	11.39	11.30	11.51	11.42	11.37
C5	11.46	11.18	11.16	11.50	11.47	11.49
C6	9.12	9.00	8.63	9.15	9.14	9.23
C7	6.34	6.31	6.32	6.43	6.58	6.51
C8	4.55	4.55	4.61	4.68	4.79	4.99
C9	3.24	3.27	3.28	3.29	3.30	3.47
C10	2.38	2.50	2.45	2.49	2.81	2.64
C11	1.69	1.77	1.80	1.83	1.89	1.95
C12	1.35	1.29	1.31	1.33	1.56	1.49
C13	0.97	0.95	1.02	0.94	1.11	1.14
C14	0.65	0.70	0.62	0.73	1.08	1.19
C15	0.56	0.51	0.54	0.53	0.19	0.29
alpha chain growth probability	0.66	0.66	0.67	0.66	0.67	0.67
C1 - C50 estimated total product distribution, weight %						
C1	26.7	28.1	28.9	27.4	26.6	26.4
C2 - C4	27.9	27.8	27.3	27.8	27.3	27.0
C5 - C12	42.0	40.8	40.3	41.6	42.2	42.5
C13 - C50	3.4	3.3	3.5	3.3	4.0	4.1
CO conversion, %	6.0	5.9	6.1	5.3	5.2	5.2
rate, g CH ₂ /g cat/hr	0.34	0.33	0.34	0.30	0.29	0.29
CO ₂ formation, %						

Performance of Co.069

Dates: 07/17/95 - 07/18/95 Run #1

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.9 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	23.5	26.5	32.5
reaction temperature, °C	220	220	220
pressure, atm	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0

C1 - C15 product distribution, weight %

C1	28.14	26.26	26.54
C2	4.71	4.51	4.53
C3	10.90	10.75	10.72
C4	11.17	11.16	11.11
C5	10.87	11.44	11.36
C6	8.43	9.27	9.17
C7	6.32	6.48	6.65
C8	4.67	4.71	4.91
C9	3.36	3.30	3.55
C10	2.45	2.41	2.72
C11	1.91	1.87	1.94
C12	1.35	1.59	1.49
C13	0.88	1.21	0.97
C14	0.74	0.82	0.74
C15	0.54	0.60	0.63
alpha chain growth probability	0.66	0.68	0.66

C1 - C50 estimated total product distribution, weight %

C1	29.0	26.6	27.1
C2 - C4	27.6	26.8	27.0
C5 - C12	40.3	42.1	42.5
C13 - C50	3.1	4.5	3.4

CO conversion, %	5.5	4.9	4.9
rate, g CH ₂ /g cat/hr	0.31	0.28	0.27
CO ₂ formation, %			

CoW.10 - Run #X

Co wt%	NM wt %	Promotor wt%		Support
10	Ru 0.50	Fe 10.00		Al ₂ O ₃

SUMMARY REACTION DATA

Reaction Conditions:

P = 1.0 atm

T = 220 °C

H₂/CO = 2

weight of catalyst = 0.201 g

WHSV = 12.78 1/hr

time on stream = 47.5 hrs

CO₂ (% of CO) =

O/P = 0.01

0.00

CO conversion (%)	1.2
rate (g CH ₂ /g cat/hr)	0.07
alpha	0.67
C1 (wt%)	31.8
C2 - C4 (wt%)	28.4
C5 - C12 (wt%)	36.3
C13 + (wt%)	3.4

Performance of CoW.10

Dates: 07/11/95 - 07/14/95 Run #X

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	2.5	5.5	8.5	11.5	17.5	20.5
reaction temperature, °C	220	220	220	220	220	220
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	90.0	90.0
C1 - C15 product distribution, weight %						
C1	34.93	34.68	39.61	37.03	35.32	34.05
C2	7.22	7.08	7.19	7.00	6.89	6.85
C3	11.96	11.84	11.28	11.43	11.58	11.82
C4	11.09	11.04	10.42	10.75	10.78	11.08
C5	10.04	10.10	9.40	9.56	9.72	10.35
C6	7.49	7.37	6.72	7.48	7.45	4.94
C7	5.16	5.15	4.73	4.96	5.27	5.72
C8	3.81	3.60	3.26	3.46	3.79	4.14
C9	2.88	2.70	2.29	2.57	2.69	3.04
C10	1.99	1.95	1.65	1.77	1.98	2.37
C11	1.38	1.48	1.25	1.33	1.47	1.67
C12	0.98	1.13	0.88	0.96	1.09	1.41
C13	0.61	0.80	0.63	0.59	0.73	1.00
C14	0.34	0.63	0.53	0.43	0.55	0.67
C15	0.12	0.47	0.16	0.41	0.41	0.15
alpha chain growth probability	0.62	0.66	0.65	0.63	0.65	0.66
C1 - C50 estimated total product distribution, weight %						
C1	35.0	34.2	39.0	36.9	35.1	33.8
C2 - C4	30.3	29.5	28.4	29.1	29.0	29.6
C5 - C12	33.3	33.4	30.2	32.0	33.4	33.5
C13 - C50	1.5	2.9	2.4	2.0	2.5	3.2
CO conversion, %	1.5	1.5	1.3	1.3	1.2	1.1
rate, g CH ₂ /g cat/hr	0.08	0.08	0.07	0.07	0.07	0.06
CO ₂ formation, %						

Performance of CoW.10

Dates: 07/11/95 - 07/14/95 Run #X

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	23.5	26.5	32.5	35.5	38.5	41.5
reaction temperature, °C	220	220	220	220	220	220
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	90.0	90.0	90.0	90.0	90.0

C1 - C15 product distribution, weight %

C1	32.27	35.23	37.41	34.85	33.71	27.95
C2	6.59	6.92	6.82	6.54	6.49	5.39
C3	11.58	12.06	11.28	11.15	11.12	9.38
C4	10.81	11.15	10.43	10.40	10.63	8.75
C5	10.19	9.77	9.49	9.60	9.55	8.02
C6	7.42	6.11	6.94	7.06	7.33	6.27
C7	5.63	5.02	4.48	5.24	4.76	8.85
C8	4.07	3.60	3.38	3.63	3.72	6.31
C9	3.00	2.73	2.50	2.62	2.65	4.63
C10	2.27	1.98	1.81	1.84	2.09	3.49
C11	1.70	1.52	1.33	1.40	1.54	1.97
C12	1.36	1.17	0.97	1.03	1.16	1.37
C13	0.95	0.84	0.67	0.71	0.80	0.96
C14	0.73	0.64	0.53	0.52	0.61	0.82
C15	0.63	0.55	0.52	0.52	0.60	0.99
alpha chain growth probability	0.67	0.66	0.65	0.65	0.66	0.68

C1 - C50 estimated total product distribution, weight %

C1	32.1	35.0	37.5	35.6	34.5	28.9
C2 - C4	28.8	29.9	28.6	28.7	28.9	24.3
C5 - C12	35.7	32.0	31.3	33.2	33.7	42.6
C13 - C50	3.5	3.0	2.5	2.5	2.9	4.2

CO conversion, %	1.4	1.4	1.5	1.4	1.4	1.6
rate, g CH ₂ /g cat/hr	0.08	0.08	0.08	0.08	0.08	0.09
CO ₂ formation, %						

Performance of CoW.10
 Dates: 07/11/95 - 07/14/95 Run #X

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 l/hr, H₂/CO ratio in feed = 2

time on stream, hr	47.5	50.5	53.5	56.5	59.5	62.5
reaction temperature, °C	220	220	220	280	280	280
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	90.0	120.0	120.0	120.0	120.0	120.0

C1 - C15 product distribution, weight %

C1	30.80	35.53	36.69	46.48	45.16	43.97
C2	6.21	6.97	7.14	12.71	12.27	11.99
C3	11.04	11.66	11.74	14.84	12.88	12.71
C4	10.25	10.46	10.64	8.97	8.66	8.83
C5	9.69	9.48	9.21	6.27	6.47	6.94
C6	7.51	5.96	6.40	2.56	4.32	4.59
C7	5.52	4.86	5.28	2.40	2.83	3.24
C8	4.01	3.28	3.75	1.63	1.88	2.10
C9	3.11	2.29	2.55	1.03	1.10	1.35
C10	2.19	1.70	1.78	0.75	0.83	0.97
C11	1.76	1.16	1.29	0.55	0.59	0.52
C12	1.30	0.79	0.86	0.38	0.45	0.32
C13	0.95	0.85	0.59	0.19	0.25	0.24
C14	0.69	0.96	0.74	0.14	0.22	0.18
C15	0.59	0.81	0.78	0.22	0.25	0.19
alpha chain growth probability	0.67	0.66	0.67	0.58	0.61	0.59

C1 - C50 estimated total product distribution, weight %

C1	31.8	36.3	35.9	46.9	45.8	44.6
C2 - C4	28.4	29.7	28.9	36.8	34.3	34.0
C5 - C12	36.3	31.1	31.7	15.7	19.0	20.6
C13 - C50	3.4	2.9	3.5	0.6	1.0	0.8

CO conversion, %	1.2	1.1	1.0	3.6	1.9	1.5
rate, g CH ₂ /g cat/hr	0.07	0.06	0.06	0.20	0.11	0.08
CO ₂ formation, %						

Performance of CoW.10
 Dates: 07/11/95 - 07/14/95 Run #X

flow rate = 90.0 cc/min, loading = 0.2 g, WHSV = 12.8 1/hr, H₂/CO ratio in feed = 2

time on stream, hr	65.5	68.5	71.5	74.5	77.5	80.5
reaction temperature, °C	280	280	280	280	280	280
pressure, atm	1.0	1.0	1.0	1.0	1.0	1.0
flow, cc/min	120.0	120.0	120.0	120.0	120.0	120.0

C1 - C15 product distribution, weight %

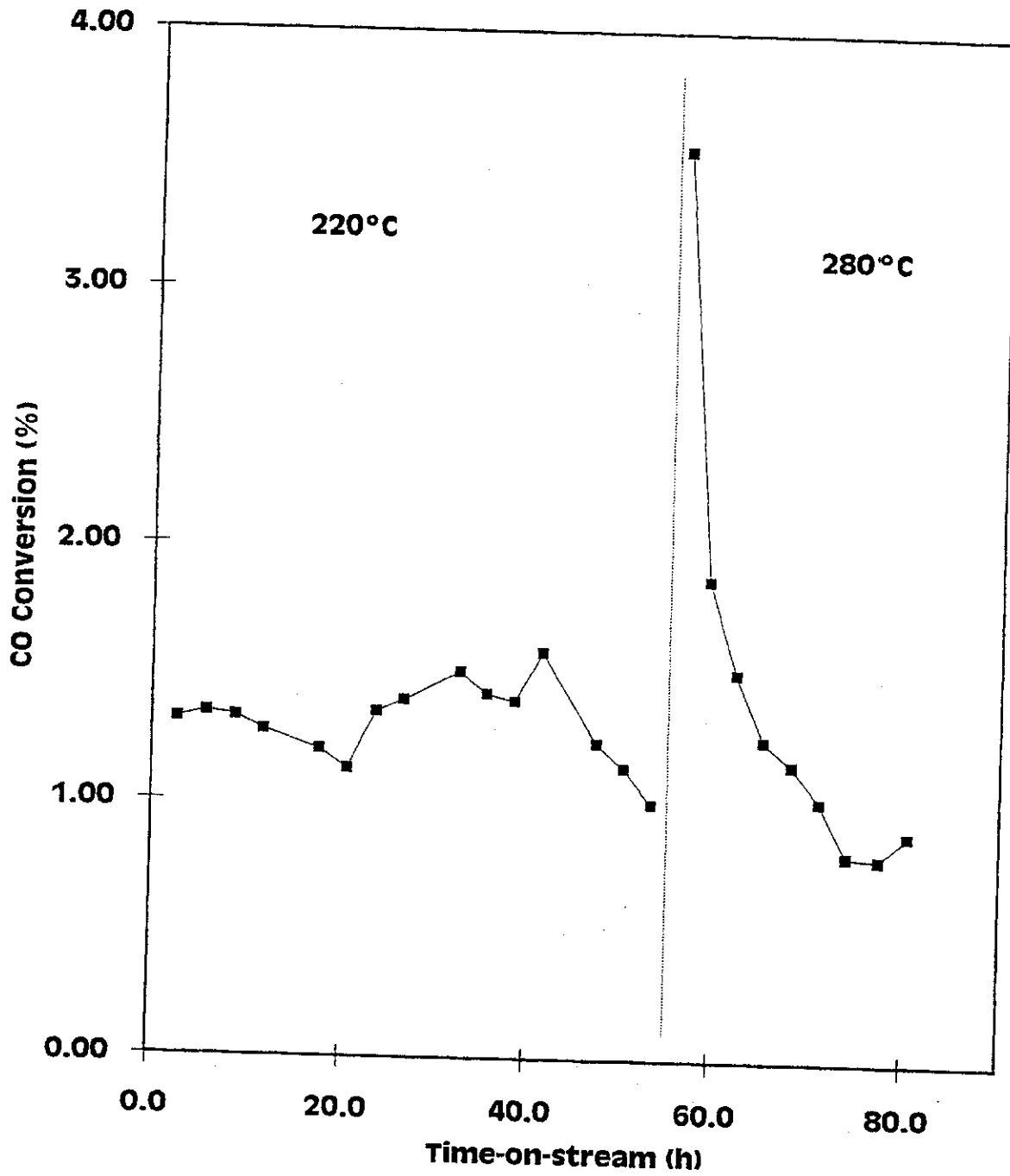
C1	41.67	44.24	38.11	43.18	34.52	36.59
C2	11.67	11.07	11.10	12.27	11.02	10.24
C3	12.76	11.67	12.73	1.05	12.61	12.13
C4	9.33	8.56	9.68	10.87	9.66	9.50
C5	7.16	6.92	7.99	8.88	8.33	8.84
C6	4.55	4.81	5.06	5.91	5.16	5.10
C7	3.42	3.38	4.12	4.57	4.62	4.80
C8	2.27	2.30	2.99	3.15	3.39	3.39
C9	1.53	1.54	1.99	2.21	2.41	2.52
C10	1.16	1.13	1.42	1.68	1.87	1.77
C11	0.73	0.73	0.96	1.12	1.52	1.30
C12	0.56	0.64	0.73	0.84	1.09	1.05
C13	0.32	0.26	0.34	0.50	0.55	0.71
C14	0.18	0.18	0.23	0.34	0.52	0.54
C15	0.21	0.18	0.23	0.29	0.29	0.36
alpha chain growth probability	0.59	0.59	0.60	0.63	0.65	0.66

C1 - C50 estimated total product distribution, weight %

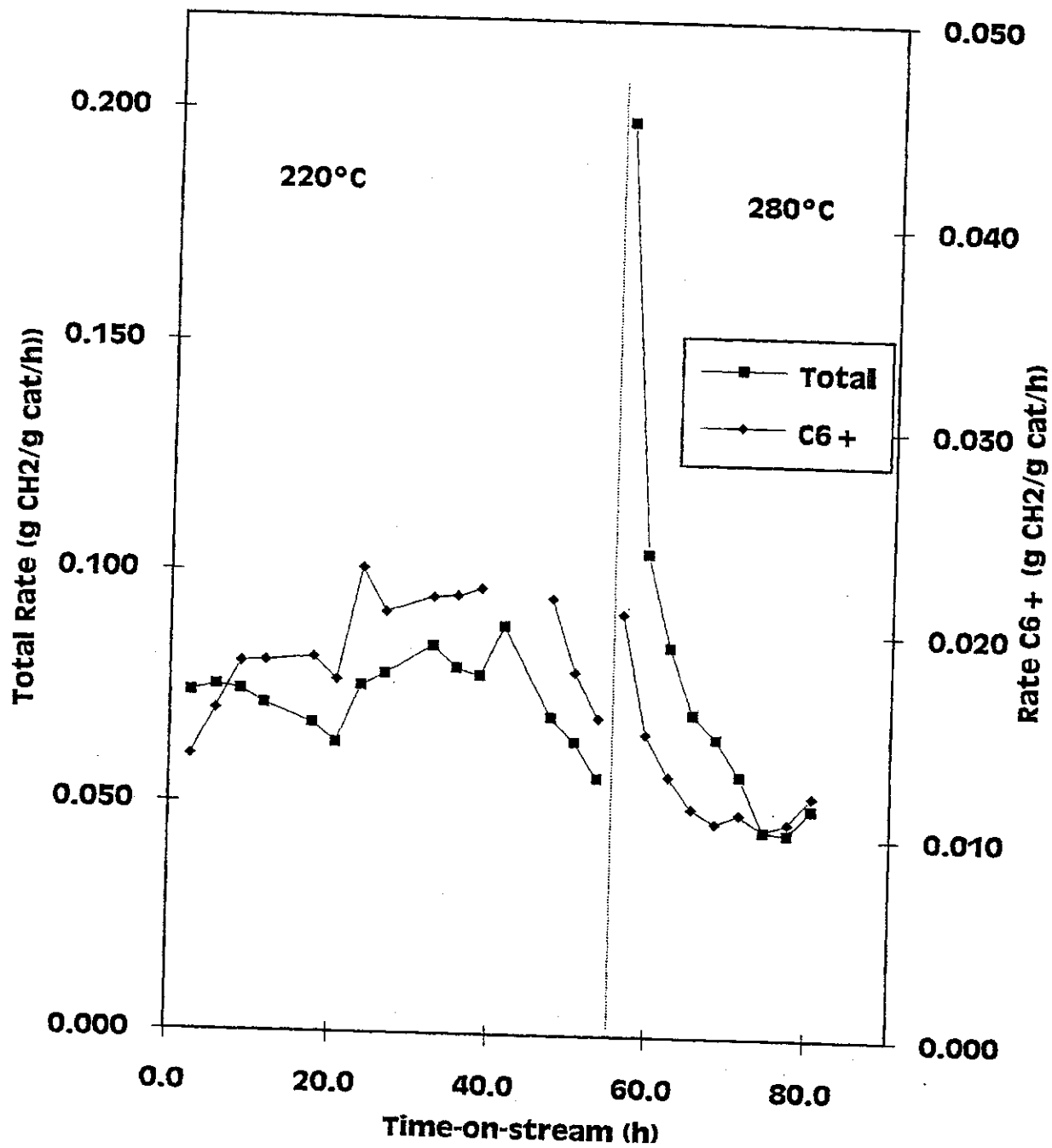
C1	42.8	45.4	39.1	44.4	35.0	36.6
C2 - C4	34.7	32.1	34.3	24.9	33.8	31.9
C5 - C12	21.8	21.7	25.6	29.1	28.7	29.0
C13 - C50	0.8	0.8	1.0	1.6	2.5	2.6

CO conversion, %	1.3	1.2	1.0	0.8	0.8	0.9
rate, g CH ₂ /g cat/hr	0.07	0.07	0.06	0.05	0.04	0.05
CO ₂ formation, %						

CO Hydrogenation on CoW.10



CO Hydrogenation on CoW.10



CO Hydrogenation on CoW.10 - ASF Product Distribution

