The C_2/C_4 olefin selectivity has an especially low priority when its increase is coupled to a strong decline of gas conversion, such as is observed, for example, upon increasing the space velocity.

In this case, the olefins which are present in the residual gas in very low concentration, on the basis of present technology, can be isolated only with considerable expenditure of energy and cost.

The C_2/C_4 olefin yield is increased by increasing the temperature, reducing the pressure, and reducing the space velocity, and generally by using carbon monoxide rich gases.

In special cases, when using catalysts with low hydrogenating activity, such as e.g. the iron whiskers, an increase of the hydrogen content can also lead to improved C_2/C_4 olefin yields.

However, care should be taken that the conditions do not entail rapid catalyst damage. Thus the variation ranges of the reaction parameters have limits set to them.

The strengths of the individual trends are often quite different and depend on the catalyst. They can be found in the numerous tables of results that are given here. On the basis of these different strengths, the optimal reaction conditions vary from catalyst to catalyst.

4.7 Comparison of Catalysts

For comparison, the most favorable catalyst from each group has been chosen, by means of which the highest C_2/C_4 olefin yield was attained. The results obtained with these catalysts, under optimal conditions, are summarized in Table 44.

Since the C_2/C_4 olefin yield depends strongly on the conversion, and since this factor differs, the yield was referred to a total conversion of 80 percent, for reasons of better comparability. It was here presupposed that the altered gas conversion does not affect the composition of the product palette. Surely this is correct only approximately. In order to keep the error small, the selection was made from runs with high gas conversion. In individual cases, results also had to be considered that were attained with lower conversion. Table 44 shows that three conversions lie between 50 and 58 percent and six between 67 and 78 percent.

The results obtained with the iron precipitation catalysts are to be regarded as the state of the art at the beginning of the investigations. They are the comparison basis for the results which were obtained with more recent catalysts.

With one exception, the results obtained in the two reactors are compared for each catalyst. The table contains data concerning the reaction conditions, the conversion, the palette, and, as the most important evaluation quantity, the actual C_2/C_4 olefin yield as well as this yield relative to 80 percent gas conversion.

With the iron precipitation catalyst, 39 g C_2/C_4 olefins per m^3 (V_n) ideal gas charge - relative to 80 percent conversion - was found in the liquid phase reactor; in the fixed-bed reactor, 32 g were obtained. Because of

the low ethylene content in the C_2 fraction, the C_2/C_4 olefins contained only 11 and respectively 9 percent ethylene. The butenes have about 60 percent of their double bonds in terminal positions.

The charging gas should have a CO/H_2 ratio of at least 1.0.

In comparison to this standard catalyst, a clearly better C_2/C_4 olefin yield was obtained with the Sasol catalyst 1 - for which only results in the liquid phase reactor are available - with 52 g per m^3 (V_n) at 80 percent conversion. The C_2 fraction is richer in olefins, and the C_2/C_4 olefins contain more ethylene. Ninety-three percent of the double bonds of the butenes have terminal positions. If one also considers that hydrogen-rich gas was used, and the residual gas was circulated, the low hydrogenation action appears clearly as a characteristic of this catalyst.

Another reduction of the hydrogenation power can be observed with the iron whisker catalyst, whose reaction products still contained 80 percent ethylene in the C_2 fraction, even with a circulation ratio of six. Relative to 80 percent conversion, 57 g C_2/C_4 olefins per m^3 (V_n) were obtained in the fixed-bed reactor and 52 g per m^3 (V_n) were still obtained in the liquid phase reactor despite considerable gas circulation. A disadvantage of this catalyst is its high content of C_{5+} products. In the future, this catalyst may become very significant, if it were possible, by means of it, also to produce shorter chained palettes.

The Ruhrchemie catalysts had the lowest activity. Especially in the liquid phase reactor, they had to be operated at rather high temperatures. With the catalyst LP 8/78, only 54 percent of the ideal gas was converted in the liquid phase, despite a low space velocity, and a temperature of 372° C. In the fixed-bed, at 340° C, the conversion was already 73 percent. Relative to 80 percent conversion, the yield in both reactors was practically the same, namely 59 and respectively 60 g C_2/C_4 olefins per m^3 (V_n). The ethylene content of these olefins is much higher in the case of conversions in the liquid phase than in the fixed bed. Its value of 34 percent is the highest in the catalyst comparison. At the high temperature in the liquid phase reactor, the shortest chained palettes were formed, as expected. The double bonds of the butenes tend to occupy terminal positions less than those generated by the Sasol and whisker catalysts. As a consequence of the high reaction temperatures, the Ruhrchemie catalysts have the lowest life times in the comparison. If it were possible to increase their life time significantly, they could in the future become very interesting because of the high ethylene content of the C_2/C_4 olefin fraction.

The highest C_2/C_4 olefin yields in the comparison, namely 64 and respectively 62 g per m^3 (V_n) - relative to 80 percent conversion - were achieved with the Mn-Fe catalyst. However, their ethylene contents were low, namely 16 and respectively 12 percent. The ethylene content of the C_2 fractions and the butene-1 contents of the butenes approximately correspond to those of the Ruhrchemie catalyst. The catalysts should be developed further because they are promising on account of their high olefin yield. One should try to raise the ethylene content of these olefins.

In summary, it can be said that higher yields of C_2/C_4 olefins can be achieved with the new catalysts than with the iron precipitation catalysts.

Important progress therefore has been achieved. Our objective to obtain sufficiently selective FT palettes for the chemical raw materials supply, however, has not yet been reached. The development work must therefore be continued.

Table 8 Results with iron precipitation catalyst 15; CO-rich gas, soft wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 15
4	experiment number 43
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H_2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 8 Ergebnisse mit dem Eisenfällungskatalysator 15; CO-reiches Gas, Normbetrieb

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 315 VERSUCHS-NR. 4 43 SUSPENSIONS-VOL. 5 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD. 25	ANALYS. 8 ZAHL	TEMP. 9 GRD.C 26	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH-GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREIS-LAUF 13 VERH.	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSAETZE 17 % VON EINSATZ CO	H2	CO+H2
1	31.03.	2.	12.	10.	270.	11.	321.	321.	209.	0.0	1.4398	1.2694	1.5.26	54.43	32.12	53.48
2	31.03.	20.	12.	11.	271.	11.	320.	321.	209.	0.0	1.4451	1.4697	1.4252	54.53	55.29	54.84
3	5.04.	15.	12.	9.	283.	11.	322.	322.	225.	0.0	1.4229	1.3905	1.4504	48.85	47.66	48.38
4	6.04.	0.	12.	12.	285.	11.	319.	319.	215.	0.0	1.4115	1.4793	1.3519	50.94	53.19	51.87
5	7.04.	0.	12.	12.	288.	11.	320.	320.	204.	0.0	1.4168	1.3727	1.4495	59.78	57.45	58.23
6	7.04.	12.	12.	12.	290.	11.	316.	316.	209.	0.0	1.4159	1.2610	1.5554	57.80	52.62	55.69
7	8.04.	0.	12.	12.	292.	11.	322.	322.	207.	0.0	1.4181	1.3732	1.4530	57.72	56.34	57.15
8	8.04.	12.	12.	12.	294.	11.	319.	319.	211.	0.0	1.4176	1.2750	1.5501	56.68	51.93	54.67

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE 19 DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	15.34	6.91	7.02	9.46	5.81	70.80	40.05	81.29	83.31	62.09	9.33	11.00	15.13	1.54	74.53
2	14.06	7.54	7.19	9.05	5.01	71.21	38.68	80.54	79.51	60.69	8.74	10.08	18.72	1.76	76.33
3	22.39	10.98	10.94	13.89	11.55	52.64	28.37	72.35	80.00	48.04	16.40	15.56	18.88	1.12	60.05
4	23.75	10.79	9.89	14.94	13.03	51.35	25.51	72.11	80.28	46.75	17.08	16.45	18.65	1.07	58.24
5	24.93	10.05	10.06	14.74	12.77	52.38	26.99	80.01	81.46	48.94	16.67	16.05	17.49	0.86	59.94
6	25.05	10.09	11.99	17.32	11.24	49.35	33.50	68.33	81.72	49.29	16.52	15.91	17.37	0.91	60.31
7	24.49	10.61	10.56	14.76	11.77	52.30	32.04	77.43	82.19	50.40	15.89	15.90	17.10	0.71	61.33
8	23.57	10.83	9.33	14.17	11.91	53.76	31.36	77.49	81.12	48.42	17.70	14.99	17.99	0.90	59.69

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES 21 C2/C4 OLEF.	MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	15.08	7.76	2.76	4.43	7.56	1.82	4.76	0.99	69.92	18.31	50.11	31.57	16.4	109.1
2	13.79	9.46	2.73	4.64	7.15	1.61	3.91	1.04	70.26	19.78	51.86	28.36	15.4	111.6
3	21.80	12.22	3.02	8.10	9.78	3.92	9.33	2.33	51.54	13.86	44.87	41.26	21.3	97.5
4	23.14	12.32	2.46	7.70	10.49	4.25	10.19	2.59	50.30	10.63	45.35	44.02	24.2	104.6
5	24.33	11.22	2.65	7.68	11.51	3.31	10.17	2.37	51.39	10.89	47.30	41.81	28.6	117.7
6	24.41	11.24	3.91	9.33	11.53	5.60	9.17	2.08	48.34	16.03	47.24	36.73	27.4	112.3
7	23.38	11.93	3.30	7.50	11.15	3.40	9.44	2.12	51.26	13.81	46.67	39.51	27.6	115.4
8	22.99	12.09	2.85	6.70	10.71	3.26	9.42	2.27	52.71	12.42	46.60	40.98	25.4	110.4

(Caption missing in original)

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 16
4 experiment number 46
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1.2 KATALYSATOR-NR. 3 16 VERSUCHS-NR. 4 46 SUSPENSIONS-VOL. 5 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD. 26	ANALYS. ZAHL 8	TEMP. 9 GRD.C 27	DRUCK 10 BAR	H2+CO 10a EINS. NL/L*H	FRISCH -GAS 11 NL/L*H	REST- GAS 12 NL/L*H	KREIS -LAUF 13 VERH.	CO/H2 FRISCH/4 -GAS	CO/H2 REST- GAS 15	CO/H2 UMSATZ/14 -VERH.	GAS-UMSAETZE % VOM EINSATZ 17 CO	H2	CO+H2
1	26.04.	12.	12.	11.	269.	11.	332.	332.	229.	1.02	0.6888	0.4143	1.1069	63.69	39.63	49.44
2	27.04.	23.	12.	12.	272.	11.	334.	334.	231.	1.08	0.6930	0.4075	1.1290	64.46	39.57	49.76
3	28.04.	23.	12.	11.	276.	11.	334.	334.	222.	1.08	0.6987	0.4050	1.0813	67.21	43.43	53.21
4	28.04.	11.	12.	10.	277.	11.	334.	334.	220.	1.08	0.7006	0.4051	1.0739	67.72	44.16	53.80
5	29.04.	23.	7.	7.	280.	11.	334.	334.	219.	1.08	0.6970	0.4045	1.0584	67.93	44.73	54.26
6	29.04.	15.	12.	8.	281.	11.	334.	334.	217.	1.08	0.7003	0.4088	1.0429	68.45	45.96	55.22
7	30.04.	0.	12.	11.	283.	11.	334.	334.	221.	1.08	0.6920	0.3987	1.0557	68.10	44.64	54.23
8	30.04.	11.	8.	8.	286.	11.	334.	334.	215.	1.08	0.7005	0.4044	1.0337	69.43	47.05	56.27

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H8-2	I- C4H10	BUTEN-1 % V. C4H8
1	13.22	20.05	20.88	25.31	16.25	17.52	4.52	21.50	42.09	13.42	16.95	11.71	34.34	3.57	31.89
2	12.68	20.65	21.25	25.27	16.41	16.42	4.14	20.03	41.03	13.37	16.66	11.01	55.31	3.65	32.57
3	11.32	21.14	21.38	24.93	15.86	16.69	3.66	17.79	38.43	12.39	15.72	10.32	57.54	4.03	32.23
4	11.09	21.32	21.50	24.85	15.85	16.47	3.57	17.42	37.79	12.19	15.37	10.24	58.14	4.06	32.26
5	10.78	22.01	21.88	25.01	15.50	15.52	3.46	16.98	37.09	12.09	15.07	9.93	58.76	4.15	32.60
6	10.63	22.34	21.96	24.87	15.66	15.15	3.41	16.70	36.56	12.02	14.78	9.77	59.06	4.37	32.87
7	11.03	24.11	23.29	26.24	16.22	10.15	3.37	16.51	36.43	12.16	14.64	9.64	59.16	4.40	33.36
8	10.76	24.12	23.00	25.69	15.83	11.36	3.33	16.44	36.43	12.12	14.62	9.70	59.13	4.43	33.25

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 C2/C4 OLEF.	MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) 23 C2/4-C	C1+
1	12.49	21.65	0.89	20.18	5.14	19.66	6.46	9.21	16.82	7.14	41.14	51.72	12.0	96.1
2	11.76	22.27	0.83	20.59	4.77	19.97	6.35	9.46	15.75	6.96	39.93	53.13	11.5	96.6
3	10.66	22.78	0.74	20.80	4.18	20.23	5.74	9.53	16.00	6.91	39.21	53.88	11.0	103.1
4	10.44	22.97	0.72	20.93	4.08	20.25	5.64	9.62	15.79	6.93	39.35	54.02	10.9	104.4
5	10.14	23.68	0.71	21.30	4.00	22.46	5.43	9.55	14.87	7.03	39.39	53.58	10.6	105.0
6	10.00	24.02	0.70	21.38	3.90	20.41	5.39	9.69	14.51	7.04	39.35	53.61	10.7	106.9
7	10.34	25.04	0.74	22.61	4.06	21.51	5.54	10.01	9.69	7.13	39.28	53.59	10.8	104.5
8	10.09	25.86	0.72	22.35	3.96	21.09	5.41	9.77	10.84	7.11	39.27	53.62	10.9	100.4

Table 10 Results of the iron precipitation catalyst 17; H_2-rich gas, soft wax

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 17
4 experiment number 49
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a H2 + CO charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 10 Ergebnisse mit dem Eisenfällungskatalysator 17; H_2-reiches Gas, Weichwachs

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1 / KATALYSATOR-NR. 17 / VERSUCHS-NR. 49 / SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO FRISCHGAS NL/LSTH	FRISCHGAS NL/LSTH	RESTGAS NL/LSTH	KREISLAUF VERH.	CO/H2 FRISCHGAS	CO/H2 RESTGAS	CO/H2 UMSATZVERH.	GAS-UMSAETZE % VON EINSATZ CO	H2	CO+H2
1	11.05.	16.	17.	19.	269.	11.	329.	329.	181.	1.09	0.6721	0.7898	0.6797	90.97	55.48	65.68
2	12.05.	10.	20.	20.	271.	11.	331.	331.	192.	1.08	0.6849	0.9072	1.0241	78.77	52.68	61.28
3	13.05.	6.	20.	20.	273.	11.	331.	331.	194.	1.09	0.6867	0.3182	1.0318	77.59	51.64	67.21
4	14.05.	2.	20.	20.	275.	11.	331.	331.	199.	1.09	0.6885	0.3274	1.0360	76.68	50.96	61.44
5	17.05.	14.	12.	11.	277.	11.	333.	333.	196.	1.08	0.6862	0.3153	1.0339	77.77	51.61	62.26
6	18.05.	1.	12.	12.	279.	11.	331.	331.	193.	1.08	0.6816	0.3141	1.0091	78.29	52.88	63.18
7	18.05.	13.	12.	12.	280.	11.	331.	331.	192.	1.08	0.6897	0.3242	1.0075	78.14	53.49	63.55
8	19.05.	1.	12.	10.	282.	11.	330.	330.	195.	1.08	0.6814	0.3253	1.0048	77.29	52.41	62.49
9	19.05.	14.	12.	11.	284.	11.	331.	331.	199.	1.00	0.6845	0.3359	1.0147	76.13	51.35	61.42
10	20.05.	1.	12.	12.	286.	11.	331.	331.	202.	1.02	0.6959	0.3429	1.0207	75.20	50.46	60.52
11	20.05.	13.	12.	12.	288.	11.	332.	332.	203.	1.08	0.7054	0.3604	1.0369	74.90	50.95	60.86
12	21.05.	1.	12.	12.	290.	11.	331.	331.	203.	1.08	0.7057	0.3709	1.0398	74.11	50.74	60.41

SELEKTIVITAETEN % VON C1+

NR.	C2/C4 OLEF.	C1	C2	C3	C4	C5+
1	11.39	17.79	15.55	20.64	13.71	19.31
2	11.67	19.44	17.02	22.35	15.04	24.15
3	11.54	20.39	17.81	22.96	15.02	23.83
4	12.19	21.26	18.62	23.51	15.04	23.77
5	10.97	20.91	18.65	23.71	14.81	22.41
6	11.16	20.96	18.76	23.18	15.53	21.57
7	10.91	21.18	19.02	23.55	15.27	21.08
8	10.94	22.19	19.62	23.71	15.25	19.23
9	11.48	23.02	20.37	24.15	15.55	16.73
10	11.39	23.76	20.82	24.61	14.79	14.03
11	10.62	24.13	21.02	24.48	13.77	14.60
12	11.35	24.24	20.99	24.34	14.19	16.23

OLEFIN-GEHALTE DER FRAKTIONEN

NR.	C2	C3	C4
1	5.05	21.50	42.84
2	4.80	21.09	40.82
3	4.80	20.63	39.71
4	5.20	20.15	40.59
5	4.67	19.41	37.71
6	4.39	18.55	38.86
7	4.40	18.42	37.72
8	4.42	18.39	37.43
9	4.54	18.89	38.30
10	4.47	18.92	37.19
11	6.22	19.27	36.46
12	4.66	20.01	38.93

ZUSAMMENSETZUNG DER C4-FRAKTION

NR.	TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	15.92	15.94	10.98	53.04	4.12	37.16
2	15.27	15.39	10.14	55.14	4.05	37.46
3	14.55	15.03	10.13	56.18	4.11	36.63
4	14.59	15.91	10.69	54.05	4.36	35.95
5	13.98	14.17	9.56	57.39	4.90	37.08
6	14.06	14.74	10.08	56.04	5.10	36.18
7	13.64	14.42	9.68	57.44	4.04	36.15
8	13.94	14.10	9.39	57.41	5.16	37.25
9	14.10	14.29	9.83	56.75	4.95	37.02
10	14.18	14.06	8.95	57.83	5.18	38.12
11	14.20	13.84	8.42	58.65	4.89	38.94
12	14.76	14.81	9.36	56.16	4.91	37.92

ZUSAMMENSETZUNG DES FT - PRODUKTES MASSEN - %

NR.	C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	10.54	19.34	0.75	15.06	4.22	16.14	5.58	7.71	31.21
2	11.05	21.06	0.77	16.45	4.47	17.51	5.84	8.73	25.20
3	10.92	22.05	0.81	17.20	4.47	18.05	5.64	8.87	22.52
4	11.42	22.96	0.83	17.73	4.47	18.57	6.07	9.21	19.95
5	10.36	22.58	0.82	17.99	4.24	19.50	5.27	9.02	21.54
6	10.54	22.83	0.78	18.15	4.06	18.68	5.70	9.29	20.37
7	10.30	22.86	0.79	18.39	4.08	18.91	5.43	9.29	20.25
8	10.30	23.91	0.82	18.93	4.11	19.10	5.30	9.31	18.44
9	10.80	24.75	0.87	19.61	4.33	19.47	5.60	9.35	16.02
10	10.42	25.52	0.87	20.02	4.37	19.64	5.17	9.34	15.33
11	9.98	25.92	0.83	20.26	4.43	19.45	4.71	8.51	15.58
12	10.66	26.09	0.90	20.17	4.57	19.17	5.19	8.43	15.57

ZUSAMMENSETZUNG DER C2/C4-OLEFINE

NR.	% C2H4	% C3H6	% C4H8
1	7.08	39.92	52.93
2	7.00	40.60	52.40
3	7.42	40.92	51.66
4	7.69	39.16	53.15
5	7.96	41.12	50.94
6	7.39	39.53	54.09
7	7.66	39.57	52.77
8	7.93	39.87	52.19
9	8.05	40.08	51.87
10	8.49	41.90	49.61
11	8.35	44.40	47.25
12	8.43	42.90	48.66

AUSBEUTEN G/NM3(IG)

NR.	C2/4-O.	C1+
1	13.6	128.6
2	13.6	123.4
3	13.2	121.1
4	13.6	119.4
5	12.5	121.0
6	12.9	122.7
7	12.7	123.4
8	12.5	121.1
9	12.9	110.8
10	12.2	116.9
11	11.7	117.5
12	12.4	116.7

Table 11 Results with an iron precipitation catalyst in the fixed-bed reactor

1	Program FT 540
2	fixed-bed reactor number 5
3	catalyst number 44
4	experiment number 10
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO chage
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin content of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 11 Ergebnisse mit einem Eisenfällungskatalysator im Festbettreaktor

PROGRAMM FT 540 / FESTBETT-REAKTOR-NR. 5. 2 KATALYSATOR-NR. 3 44 VERSUCHS-NR. 4 10 KATALYSATOR-VOL. 0.050 L

NR.	BEGINN TAG	BEGINN STD. 6	DAUER STD. 7	ANALYS.-ZAHL 8	TEMP. GRD.C 9	DRUCK BAR 10	H2+CO EINS. NL/L*H 10a 11	FRISCH-GAS NL/L*H 12	REST-GAS NL/L*H 13	KREIS-LAUF VERH. 14
1	27.10.	13.	14.	2.	270.	11.	234.	226.	124.	0.0
2	3.11.	14.	20.	5.	280.	11.	192.	213.	107.	0.0
3	4.11.	13.	22.	4.	280.	11.	139.	154.	85.	0.0
4	7.11.	1.	22.	5.	281.	11.	199.	210.	113.	0.0
5	8.11.	16.	19.	4.	290.	11.	187.	208.	113.	0.0
6	9.11.	13.	24.	5.	291.	11.	340.	376.	233.	0.0
7	10.11.	11.	20.	3.	281.	11.	389.	430.	264.	0.0
8	13.11.	13.	23.	4.	291.	11.	341.	379.	244.	0.0
9	14.11.	14.	24.	4.	300.	11.	313.	347.	197.	0.0
10	15.11.	14.	24.	3.	330.	11.	316.	349.	197.	0.0
11	16.11.	14.	24.	4.	330.	11.	297.	329.	176.	0.0
12	17.11.	13.	14.	5.	300.	11.	132.	146.	83.	0.0

NR.	CO/H2 FRISCH-GAS 15	CO/H2 REST-GAS 16	CO/H2 UMSATZ-VERH. 17	GAS-UMSAETZE % VON EINSATZ 18 CO	H2	CO+H2
1	1.2930	0.5416	1.6453	66.00	66.91	77.63
2	1.2569	0.3165	1.5525	93.38	73.70	84.66
3	0.6916	0.1858	1.4519	92.62	60.97	76.65
4	0.9769	0.1479	1.4561	94.43	63.22	78.64
5	0.9792	0.1521	1.4760	94.15	62.40	78.10
6	0.9829	0.4113	1.5256	79.59	51.28	65.31
7	0.9835	0.3960	1.5274	81.13	52.08	66.47
8	0.9990	0.4350	1.5861	77.14	48.13	62.58
9	0.9157	0.2193	1.5032	91.30	60.48	75.85
10	0.9745	0.2526	1.4457	85.77	63.51	74.55
11	0.9701	0.1481	1.4106	94.67	65.11	79.67
12	0.9713	0.2219	1.4732	90.84	59.89	75.14

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ 19 C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 20 C2	C3	C4
1	17.39	6.65	5.97	10.12	9.57	67.68	31.22	77.61	79.90
2	16.69	8.20	5.77	10.82	10.42	64.79	20.64	71.86	74.06
3	18.89	11.03	7.74	13.43	11.52	56.28	17.58	66.75	74.34
4	19.12	11.00	7.71	13.35	11.52	56.42	17.45	66.16	68.88
5	17.18	11.00	7.81	12.95	13.39	57.77	17.88	66.50	69.02
6	18.65	10.83	7.26	12.15	10.95	58.81	25.46	71.69	73.92
7	18.30	10.83	7.21	12.10	10.63	59.24	25.04	71.66	73.65
8	20.68	11.19	8.02	13.12	11.86	55.82	20.31	72.73	74.85
9	20.37	12.76	8.53	14.11	12.53	52.06	21.46	68.07	71.30
10	20.00	12.82	7.88	13.22	12.30	53.77	22.59	69.33	73.59
11	20.14	13.29	8.03	13.51	12.70	52.47	21.90	68.01	72.10
12	21.39	13.99	9.11	13.80	13.32	50.78	23.14	70.10	73.77

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES 22 MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	17.38	7.47	1.83	6.32	7.74	2.31	7.51	1.96	66.85
2	16.32	8.17	1.81	6.80	7.61	3.12	7.55	2.74	63.55
3	18.38	12.27	1.92	6.65	8.72	4.55	8.33	2.92	55.17
4	17.61	12.22	1.91	6.63	8.59	4.60	7.71	3.61	55.33
5	16.70	12.32	1.86	6.68	8.17	4.42	6.97	3.24	56.64
6	18.17	12.06	1.80	5.65	8.48	3.51	7.89	2.88	57.72
7	17.83	12.06	1.76	5.64	8.44	3.50	7.63	2.83	58.15
8	20.14	12.46	2.21	6.00	9.29	3.65	8.64	3.01	54.74
9	19.76	14.16	1.78	6.97	9.32	4.58	8.67	3.62	50.92
10	19.42	14.23	1.73	6.85	8.90	4.13	8.79	3.27	52.60
11	19.53	14.74	1.73	6.53	8.95	4.41	8.38	3.56	51.23
12	20.74	15.51	1.83	6.46	9.38	4.19	9.52	3.51	49.59

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 23 % C2H4	% C3H6	% C4H8
1	10.72	45.29	43.98
2	7.14	46.60	46.26
3	7.20	47.47	45.33
4	7.43	48.76	43.81
5	8.13	50.12	41.74
6	9.90	46.69	43.40
7	9.96	47.36	42.78
8	10.67	46.12	42.91
9	8.99	47.14	43.87
10	8.61	46.83	45.27
11	8.49	46.09	45.48
12	8.04	45.23	45.92

NR.	AUSBEUTEN GESAMT(G) C2/4-C	C1+
1	27.0	158.2
2	28.0	171.7
3	28.4	154.4
4	27.9	158.2
5	26.2	157.1
6	23.9	131.7
7	23.9	134.1
8	25.4	126.2
9	30.1	152.2
10	29.2	150.6
11	31.2	155.8
12	31.2	150.6

Table 12 Results of the Sasol catalyst 1; soft wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 18
4	experiment number 53
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 12 Ergebnisse mit dem Sasol-Katalysator 1; Weichwachs

PROG:AMM ET 560 (1) FLUESSIGPHASE-REAKTOR-NR. 1. (2) KATALYSATOR-NR. 3 18 VERSUCHS-NR. 53 (4) SUSPENSIONS-VOL. 5 3.0[illegible] L

NR.	BEGINN TAG (6)	BEGINN STD. (6a)	DAUER STD. (7)	ANALYS.-ZAHL (8)	TEMP. GRD.C (9)	DRUCK BAR (10)	H2+CO EINS. NL/L*H (10a)	FRISCH-GAS NL/L*H (11)	REST-GAS NL/L*H (12)	KREIS-LAUF VERH. (13)	CO/H2 FRISCH-GAS (14)	CO/H2 REST-GAS (15)	CO/H2 UMSATZ-VERH. (16)	GAS-UMSAETZE % VOM EINSATZ CO (17)	GAS-UMSAETZE % VOM EINSATZ H2 (17)	GAS-UMSAETZE % VOM EINSATZ CO+H2 (17)
1	2.06.	14.	22.	20.	299.	11.	350.	350.	182.	1.17	0.4198	0.1579	0.6917	79.76	47.37	56.30
2	3.06.	10.	22.	21.	300.	11.	350.	350.	178.	1.17	0.4205	0.1505	0.6859	82.26	50.53	59.85
3	4.06.	8.	22.	17.	308.	11.	349.	349.	182.	1.17	0.4182	0.1710	0.6699	79.38	49.55	58.34
4	8.06.	15.	22.	19.	314.	16.	344.	344.	172.	1.17	0.4103	0.1461	0.6621	82.62	51.20	60.34
5	9.06.	10.	22.	21.	314.	16.	346.	345.	186.	1.17	0.4181	0.1915	0.6751	75.65	46.85	55.36
6	22.06.	12.	24.	21.	315.	16.	360.	360.	162.	1.17	0.4521	0.1850	0.6358	83.32	59.24	66.73
7	10.06.	17.	5.	5.	314.	16.	318.	319.	134.	1.25	0.7715	0.3198	1.0032	65.95	66.10	74.74
8	10.06.	22.	5.	5.	314.	16.	312.	312.	110.	1.25	0.7494	0.2396	0.9305	91.67	73.82	81.47
9	11.06.	6.	22.	6.	315.	16.	309.	309.	79.	1.25	0.7488	0.1529	0.8450	97.16	86.10	90.84
10	15.06.	12.	18.	3.	312.	16.	313.	313.	86.	1.25	0.7399	0.1817	0.8449	96.05	83.91	89.07
11	15.06.	15.	18.	15.	313.	16.	321.	321.	89.	1.25	0.7575	0.1947	0.8625	95.94	84.27	89.31
12	16.06.	7.	18.	18.	313.	16.	315.	315.	93.	1.25	0.7546	0.2013	0.8931	94.98	81.16	87.10

NR.	SELEKTIVITAETEN (18) C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE (19) DER FRAKTIONEN C2	C3	C4
1	26.97	12.05	10.55	14.33	11.11	51.96	61.93	80.42	90.23
2	27.55	12.04	10.66	14.09	10.96	52.25	64.18	82.62	82.07
3	28.80	13.13	11.03	14.73	11.18	49.93	65.59	83.17	83.31
4	27.79	13.31	10.89	14.12	10.32	51.35	65.36	85.29	83.64
5	28.57	13.01	10.73	14.21	10.89	51.16	67.09	85.73	84.35
6	32.98	14.11	12.85	15.72	13.35	43.97	67.51	83.60	83.60
7	17.72	6.63	6.46	8.77	5.96	72.18	71.80	89.50	87.70
8	16.43	6.21	6.03	8.14	5.56	74.06	70.42	89.78	87.70
9	15.47	6.42	6.26	7.77	5.17	74.39	64.91	88.57	87.55
10	17.58	6.22	6.73	8.61	6.49	71.95	66.42	86.79	86.79
11	17.09	6.16	6.56	8.56	6.19	72.52	66.47	86.27	86.27
12	15.76	5.35	5.83	7.78	5.76	75.28	69.63	86.41	86.41

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION (20) C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	71.09	4.56	4.58	17.78	1.99	89.63
2	74.52	3.48	4.07	15.78	2.15	90.83
3	76.08	3.23	4.00	14.62	2.07	91.32
4	76.74	3.20	3.70	14.42	1.94	91.75
5	77.72	3.10	3.54	13.76	1.89	92.13
6	77.65	2.72	3.24	14.43	1.97	92.88
7	82.79	2.04	2.87	10.78	1.53	94.41
8	82.79	2.04	2.87	10.78	1.53	94.41
9	80.41	2.83	4.31	10.94	1.51	91.85
10	82.70	2.03	2.55	11.47	1.74	94.72
11	80.30	2.69	3.27	12.04	1.70	93.09
12	80.71	2.54	3.15	11.98	1.61	93.41

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES (21) C2/C4 OLEF.	MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	26.31	13.44	6.37	4.20	11.24	2.87	8.70	2.22	50.97
2	26.82	13.44	6.75	3.72	11.36	2.50	8.79	1.99	51.26
3	28.08	14.64	7.06	3.97	11.94	2.53	9.08	1.88	48.90
4	27.09	14.84	6.94	3.94	11.74	2.12	8.42	1.71	50.29
5	27.87	14.52	7.02	3.69	11.99	2.07	8.96	1.72	50.13
6	32.10	15.71	8.44	4.35	12.79	2.63	10.07	2.21	43.00
7	17.47	7.48	4.58	1.92	7.74	0.95	5.16	0.75	71.43
8	16.21	7.01	4.19	1.89	7.21	0.86	4.81	0.70	73.33
9	15.25	7.24	4.01	2.32	6.79	0.92	4.46	0.66	73.61
10	17.33	7.72	4.41	2.30	7.37	1.18	5.56	0.88	71.21
11	16.85	6.95	4.30	2.33	7.28	1.21	5.27	0.87	71.79
12	15.56	6.95	4.01	1.87	6.64	1.09	4.91	0.80	74.63

NR.	ZUSAMMENSETZUNG (22) DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN (23) G/NM3(TG) C2/4-O	C1+
1	24.22	42.72	33.06	30.2	114.8
2	25.11	42.23	32.66	32.5	121.0
3	25.13	42.53	32.34	33.1	117.8
4	25.61	43.32	31.07	33.0	121.8
5	25.20	42.65	32.14	31.2	111.8
6	26.30	39.85	33.85	43.2	134.5
7	26.21	44.29	29.51	26.8	153.1
8	25.85	44.45	29.70	27.1	167.0
9	26.26	44.50	29.24	28.4	186.1
10	25.42	42.52	32.05	31.6	182.5
11	25.52	43.21	31.27	30.8	182.9
12	25.76	42.66	31.59	27.8	178.7

Table 13 Results with the Sasol catalyst 1, hard wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 22
4	experiment number 70
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 13 Ergebnisse mit dem Sasol-Katalysator 1; Hartwachs

PROGRAMM FT 940 / FLUESSIGPHASE-REAKTOR-NR. 1 KATALYSATOR-NR. 22 VERSUCHS-NR. 70 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH -GAS NL/L*H	REST- GAS NL/L*H	KREIS -LAUF VERH.	CO/H2 FRISCH -GAS	CO/H2 REST- GAS	CO/H2 UMSATZ -VERH.	GAS-UMSATZ % VOM EINSATZ CO	GAS-UMSATZ % VOM EINSATZ H2	GAS-UMSATZ % VOM EINSATZ CO+H2
1	7.10.	18.	32.	14.	320.	15.	349.	349.	130.	1.17	0.3568	0.0432	2.9163	99.84	64.22	74.01
2	7.10.	19.	32.	15.	320.	15.	348.	348.	129.	1.17	0.3573	0.0435	0.9171	99.89	64.27	74.07
3	11.10.	13.	36.	17.	318.	15.	348.	348.	183.	1.17	0.3569	0.0893	0.6277	97.75	49.90	59.85
4	11.10.	14.	36.	17.	318.	15.	348.	348.	184.	1.17	0.3571	0.0899	0.6217	97.79	49.49	59.47
5	12.10.	23.	36.	18.	317.	15.	351.	351.	200.	1.17	0.3631	0.1265	0.6741	80.21	43.21	53.06
6	13.10.	0.	36.	19.	317.	15.	351.	351.	200.	1.17	0.3605	0.1257	0.6747	80.02	42.62	52.52
7	18.10.	16.	36.	14.	321.	15.	320.	320.	116.	1.25	0.6917	0.1475	0.8477	94.87	74.29	83.82
8	19.10.	17.	36.	15.	321.	15.	323.	323.	117.	1.25	0.6891	0.1511	0.8532	94.87	74.62	84.05
9	20.10.	0.	36.	18.	320.	15.	325.	325.	126.	1.25	0.6741	0.1642	0.8917	93.57	72.94	81.33
10	20.10.	1.	36.	18.	320.	15.	325.	325.	126.	1.25	0.6935	0.1648	0.8925	93.50	72.69	81.19
11	21.10.	12.	36.	18.	320.	15.	327.	327.	137.	1.25	0.6950	0.1826	0.9296	91.79	69.79	78.17
12	21.10.	13.	36.	18.	320.	15.	325.	325.	135.	1.25	0.6925	0.1827	0.9215	91.82	69.81	78.36
13	25.10.	15.	32.	14.	321.	15.	344.	344.	174.	0.60	1.2105	0.5232	1.5123	86.61	69.49	78.98
14	25.10.	7.	32.	14.	319.	15.	350.	353.	232.	0.60	1.1761	0.7905	1.5270	67.99	52.36	60.80

NR.	SELEKTIVITAETEN % VON C1+ C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	21.23	14.72	10.26	13.64	10.00	51.39	53.98	73.36	74.96	88.95	4.00	3.70	21.00	2.34	89.99
2	22.82	14.52	10.12	13.47	9.85	52.04	53.63	73.03	76.66	88.95	4.00	3.70	21.00	2.34	89.95
3	25.98	15.16	10.38	13.92	11.30	47.28	60.37	77.35	79.48	72.01	3.55	3.92	18.44	2.07	90.00
4	25.72	14.98	10.20	13.79	11.15	49.99	60.61	77.55	79.48	72.01	3.55	3.97	18.44	2.07	90.60
5	24.20	15.35	10.39	13.20	10.94	50.22	55.05	76.24	78.41	69.49	4.30	4.42	19.94	2.05	89.62
6	24.42	15.73	10.10	13.37	11.12	49.66	54.44	76.05	78.12	68.93	4.43	4.54	19.74	2.14	89.23
7	16.65	7.93	6.73	9.03	8.57	69.77	60.78	79.44	82.48	75.28	3.58	3.62	15.51	2.01	91.27
8	16.93	7.95	6.78	9.11	6.80	69.36	60.37	79.43	82.43	74.05	3.67	3.71	15.60	1.97	91.34
9	14.91	7.22	5.93	7.55	5.99	73.35	60.39	78.32	80.70	72.52	4.09	4.09	17.20	2.10	89.96
10	14.10	7.19	5.82	7.44	5.87	73.67	60.96	79.09	80.85	73.24	3.84	3.74	17.13	2.09	90.61
11	13.41	7.33	5.63	7.01	5.59	74.78	62.59	77.67	79.99	72.28	3.91	3.80	17.96	2.14	90.36
12	13.03	6.86	5.46	6.82	5.37	75.51	62.70	77.72	80.13	72.66	3.78	3.72	17.77	2.12	90.67
13	9.55	4.72	3.92	4.46	3.74	83.18	71.80	82.42	82.18	75.12	3.42	3.55	16.92	1.79	91.41
14	12.80	8.34	5.78	6.13	4.60	75.46	66.38	82.57	82.94	75.21	3.53	3.59	15.95	1.72	91.35

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(STD) C2/C4-O	C1+
1	22.51	16.36	5.32	4.91	9.71	3.69	7.43	2.35	50.20	23.87	49.11	91.02	33.5	148.6
2	22.15	16.10	5.27	4.88	9.55	3.70	7.33	2.31	50.86	23.79	48.12	33.09	32.9	148.7
3	25.23	16.84	6.06	4.27	10.45	3.21	9.72	2.23	48.13	24.82	41.42	34.56	30.3	120.2
4	24.05	16.63	6.00	4.18	10.18	3.15	8.60	2.30	48.78	24.03	41.56	34.44	29.9	119.5
5	23.47	17.29	5.39	4.72	9.76	3.19	8.32	2.37	49.01	22.96	41.50	35.45	25.0	106.5
6	23.65	17.46	5.38	4.82	9.95	3.25	8.47	2.44	48.39	22.73	41.56	35.61	24.9	105.3
7	16.35	8.97	3.98	2.91	7.04	1.91	5.33	1.17	69.88	24.35	43.05	32.59	27.9	170.9
8	16.59	8.93	4.02	2.93	7.10	1.93	5.51	1.22	68.47	24.16	42.72	33.12	28.5	171.3
9	14.36	8.11	3.50	2.46	5.81	1.69	4.75	1.18	72.50	24.00	41.73	34.27	23.3	165.9
10	13.86	9.09	3.48	2.40	5.71	1.68	4.67	1.15	72.82	23.11	41.22	35.67	23.0	166.7
11	13.19	7.91	3.44	2.21	5.35	1.51	4.39	1.14	73.95	24.11	40.31	35.32	21.0	159.5
12	12.10	7.71	3.36	2.16	5.21	1.57	4.23	1.09	74.69	24.25	40.30	35.05	20.5	160.0
13	9.43	5.33	2.77	1.16	3.53	0.91	3.04	0.68	82.58	29.34	38.47	32.19	15.3	162.1
14	12.58	9.33	3.99	1.93	4.27	1.15	3.72	0.83	74.44	30.88	39.53	29.59	15.6	124.9

Table 14 Results with the Sasol catalyst 2; soft wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 19
4	experiment number 57
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 14 Ergebnisse mit dem Sasol-Katalysator 2; Weichwachs

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 19 VERSUCHS-NR. 57 SUSPENSIONS-VOL. 3.002 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANA-LYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	29.06.	7.	21.	20.	318.	16.	392.	392.	125.	1.17	0.4972	0.0702	0.5409	95.13	71.59	79.39
2	30.06.	8.	21.	21.	318.	16.	350.	350.	123.	1.17	0.4009	0.0677	0.5297	95.79	72.17	79.79
3	1.07.	0.	21.	21.	319.	16.	359.	359.	125.	1.17	0.4034	0.0726	0.5248	95.01	72.40	78.92
4	2.07.	1.	21.	21.	319.	16.	350.	350.	120.	1.17	0.3991	0.0763	0.5265	94.53	71.71	79.74
5	6.07.	10.	21.	23.	314.	16.	327.	327.	121.	0.64	0.7757	0.1520	0.9942	95.57	77.40	85.37
6	7.07.	6.	21.	21.	314.	16.	333.	333.	115.	0.64	0.7817	0.1552	0.9495	96.29	79.98	87.15
7	8.07.	3.	21.	20.	314.	16.	327.	327.	112.	0.64	0.7707	0.1406	0.9358	96.44	80.75	87.34
8	9.07.	0.	21.	22.	312.	16.	374.	374.	110.	0.64	0.7591	0.1361	0.9125	96.46	93.24	87.26
9	12.07.	16.	21.	17.	316.	16.	344.	344.	169.	0.60	1.3657	0.6112	1.6079	49.16	75.77	83.53
10	13.07.	9.	13.	10.	316.	16.	345.	345.	177.	0.60	1.3444	0.6776	1.5951	96.40	72.82	80.61
11	13.07.	19.	6.	6.	317.	16.	349.	349.	209.	0.63	1.3711	0.9699	1.6327	72.71	61.06	67.79
12	14.07.	1.	5.	5.	317.	16.	343.	341.	253.	0.60	1.3502	1.2512	1.4873	46.13	61.93	46.37
13	14.07.	6.	21.	27.	315.	16.	347.	347.	269.	0.62	1.3835	1.3762	1.7961	37.34	37.20	37.17

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	24.67	24.22	14.22	19.53	12.50	30.54	19.79	70.50	73.50	49.44	11.01	11.54	26.27	2.71	68.72
2	24.53	26.95	14.37	19.32	11.99	29.24	18.42	72.21	72.21	48.81	11.73	11.67	25.46	2.33	67.60
3	25.19	29.72	14.98	18.65	12.19	25.46	17.48	73.20	73.20	49.39	11.96	11.86	24.57	2.23	67.46
4	25.15	30.92	15.39	18.51	12.37	24.30	17.27	73.73	73.73	49.52	12.11	12.08	24.06	2.21	67.19
5	23.45	11.32	9.66	13.95	10.13	52.94	39.37	89.34	83.64	69.63	7.34	8.18	14.20	2.16	81.81
6	23.79	12.25	9.33	14.19	10.01	54.24	39.87	82.71	85.23	69.91	7.34	7.97	13.07	1.71	82.03
7	23.17	12.06	9.23	14.07	9.67	54.97	37.28	81.77	85.03	68.90	7.41	8.72	13.49	1.48	81.34
8	22.41	12.43	9.41	14.02	9.40	54.79	34.79	80.27	63.98	67.53	7.76	8.69	14.14	1.93	83.41
9	23.33	17.92	9.92	13.43	11.21	53.46	33.70	83.88	83.68	64.97	8.43	10.22	15.02	1.31	77.64
10	23.69	15.33	9.47	14.28	10.30	53.06	34.81	82.32	83.79	64.08	9.13	10.58	15.09	1.12	76.47
11	25.79	17.39	13.14	15.14	11.79	45.55	34.87	81.77	83.79	64.08	9.13	10.58	15.09	1.12	76.47
12	29.17	20.46	11.23	15.25	14.02	30.99	36.69	81.85	83.79	64.08	9.13	10.58	15.09	1.12	76.47
13	25.39	20.95	11.29	14.53	11.34	41.99	39.46	80.53	81.46	61.24	9.46	10.76	16.59	1.95	75.10

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	23.31	26.39	2.67	11.66	12.45	5.46	8.39	3.64	29.34	11.36	52.94	35.73	36.2	153.9
2	23.32	28.37	2.52	11.94	12.58	5.07	8.23	3.28	28.06	10.79	53.93	35.28	36.0	154.3
3	23.86	31.11	2.49	12.55	12.93	4.96	8.45	3.21	24.31	10.39	54.19	35.42	34.7	153.9
4	23.70	32.49	2.46	12.65	12.90	4.92	8.42	3.11	23.16	10.36	54.25	35.39	36.2	157.3
5	22.92	14.83	3.67	6.14	13.90	2.40	8.24	1.67	51.75	16.09	47.78	36.13	39.2	172.3
6	23.38	13.46	3.62	5.85	11.45	2.51	8.31	1.49	53.11	15.47	48.96	35.57	41.1	175.3
7	22.59	12.45	3.35	6.05	11.21	2.62	8.02	1.46	53.83	14.85	49.65	35.50	39.8	176.4
8	21.33	13.82	3.19	6.43	10.95	2.82	7.69	1.52	53.61	14.80	50.16	35.24	38.4	176.3
9	22.58	14.39	2.93	6.12	10.62	2.63	9.10	1.35	52.28	12.90	46.82	40.29	38.2	169.3
10	22.98	16.98	3.20	6.42	11.41	2.57	8.37	1.58	49.28	13.91	49.65	36.43	37.2	161.9
11	24.95	19.23	3.42	6.85	11.97	2.93	9.55	1.91	44.26	13.72	48.00	39.29	33.8	135.8
12	27.11	22.53	3.94	7.37	12.92	2.79	11.31	2.77	37.72	14.59	44.00	41.42	24.1	88.2
13	24.43	22.99	4.29	7.05	11.26	2.99	9.89	2.10	40.62	17.55	46.38	36.39	18.1	73.9

Table 15 Results of the Sasol catalyst 2, hard wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 23
4	experiment number 72
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT fraction, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 15 Ergebnisse mit dem Sasol-Katalysator 2; Hartwachs

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1.2 KATALYSATOR-NR.3 23 VERSUCHS-NR.4 72 SUSPENSIONS-VOL.5 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD.	ANALYS. ZAHL 8	TEMP. 9 GRD.C 26	DRUCK 10 BAR	H2+CO EINS. NL/L*H	FRISCH -GAS NL/L*H 10a	REST- GAS NL/L*H 11	KREIS -LAUF VERH. 12	CO/H2 FRISCH -GAS 13	CO/H2 REST- GAS 14	CO/H2 UMSATZ -VERH. 15	GAS-UMSATZ % VON EINSATZ CO	GAS-UMSATZ % VON EINSATZ H2	GAS-UMSATZ % VON EINSATZ CO+H2 17
1	3.11.	0.	20.	6.	322.	15.	348.	362.	135.	1.17	0.3764	0.0626	0.4960	95.70	74.12	80.02
2	4.11.	14.	18.	11.	322.	15.	348.	362.	134.	1.17	0.3819	0.0723	0.4654	95.98	78.76	83.52
3	5.11.	1.	18.	15.	322.	15.	348.	360.	132.	1.17	0.3958	0.0757	0.4810	96.17	80.49	84.86
4	8.11.	19.	26.	21.	322.	15.	314.	334.	129.	0.64	0.6807	0.1271	0.8296	96.04	78.80	85.78
5	9.11.	16.	25.	25.	322.	15.	315.	335.	133.	0.64	0.6917	0.1295	0.8565	95.76	77.33	84.86
6	10.11.	8.	24.	14.	322.	15.	305.	326.	140.	0.64	0.6617	0.1183	0.8779	94.92	71.54	80.85
7	11.11.	22.	27.	14.	322.	15.	307.	328.	156.	0.64	0.6651	0.1313	0.8801	94.19	70.54	79.98
8	11.11.	12.	27.	13.	322.	15.	306.	329.	158.	0.64	0.6709	0.1322	0.9049	94.03	69.70	79.47

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	27.29	22.76	14.25	18.14	11.90	32.95	38.52	71.02	74.92	65.04	4.92	4.86	22.74	2.44	86.93
2	25.94	32.18	16.25	19.10	11.70	20.78	30.47	65.69	72.18	61.92	5.29	4.99	25.19	2.62	85.77
3	25.64	33.98	16.42	19.02	11.40	19.18	29.97	66.17	72.77	62.15	5.41	5.21	24.56	2.67	85.41
4	20.70	12.57	8.21	11.53	8.59	59.10	53.79	83.66	77.25	70.51	3.38	3.36	14.33	8.42	91.28
5	21.01	11.63	7.93	11.55	9.06	59.83	52.30	84.47	78.35	70.84	3.68	3.83	12.91	8.74	90.41
6	21.53	14.50	9.74	13.84	10.17	51.74	32.66	76.39	76.43	60.78	7.72	7.93	15.72	7.85	79.52
7	20.80	19.03	12.19	15.84	11.20	40.94	22.21	64.08	70.88	47.10	12.44	11.34	21.09	8.03	66.45
8	21.44	19.54	11.89	15.39	11.25	41.93	26.16	67.31	70.89	49.09	11.36	10.44	21.19	7.92	69.25

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	26.10	24.91	5.25	8.99	12.33	5.27	8.52	2.97	31.76	20.12	47.24	32.64	41.2	158.0
2	24.46	34.71	4.67	11.42	11.83	6.47	7.96	3.16	19.75	19.09	48.36	32.56	39.6	162.1
3	24.12	36.56	4.48	11.76	11.84	6.34	7.80	3.02	18.19	18.52	48.09	32.35	39.6	164.2
4	20.17	14.01	4.30	3.96	9.40	1.92	6.46	1.97	57.96	21.34	46.60	32.05	34.9	173.1
5	20.51	12.98	4.05	3.95	9.52	1.83	6.93	1.98	58.75	19.76	46.44	33.80	35.2	171.6
6	20.87	16.08	3.09	6.81	10.25	3.32	7.54	2.41	50.50	14.77	49.12	36.11	33.8	162.1
7	19.95	21.75	2.60	9.75	9.74	5.72	7.61	3.24	39.59	13.02	48.82	38.17	31.6	158.3
8	20.59	21.46	2.99	9.03	9.95	5.06	7.66	3.26	40.60	14.50	48.31	37.19	32.4	157.5

Table 16 Results of the Sasol catalyst 3, soft wax

1	Program FT 540
2	liquid phase reactor number 1
3	catalyst number 20
4	experiment number 59
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degree C

ab. 16 Ergebnisse mit dem Sasol-Katalysator 3; Weichwachs

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 320 VERSUCHS-NR. 4 59 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD.	ANALYS. ZAHL 8	TEMP. 9 GRD.C 26	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH-GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREISLAUF 13 VERH.	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ 16 -VERH.	GAS-UMSAETZE % VOM EINSATZ 17 CO	H2	CO+H2
1	20.07.	10.	24.	3.	318.	16.	354.	354.	102.	1.17	0.4009	0.0965	0.5013	94.02	75.19	80.58
2	20.07.	13.	24.	8.	318.	16.	354.	354.	113.	1.17	0.4043	0.1144	0.5072	92.58	73.79	79.20
3	20.07.	22.	24.	15.	317.	16.	350.	350.	132.	1.17	0.3902	0.1248	0.5113	89.98	69.67	74.65
4	21.07.	22.	24.	23.	317.	16.	350.	350.	151.	1.17	0.3875	0.1470	0.5274	86.04	63.22	69.59
5	27.07.	9.	21.	21.	317.	16.	330.	330.	218.	1.25	0.7928	0.6453	0.9851	53.93	43.40	48.06
6	28.07.	6.	21.	21.	317.	16.	330.	330.	218.	1.25	0.7881	0.6373	0.9869	54.03	43.14	47.94
7	29.07.	3.	21.	7.	318.	16.	329.	329.	234.	1.25	0.7824	0.6065	0.9729	59.70	48.01	53.15

NR.	SELEKTIVITAETEN % VON C1+ 18 C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4
1	11.49	15.91	10.56	12.57	8.13	52.83	9.51	43.58	61.64
2	12.38	19.34	12.80	15.21	9.01	42.84	8.11	37.71	57.13
3	14.28	23.91	15.48	18.24	11.79	30.57	7.64	36.40	54.75
4	17.45	25.63	16.27	19.09	14.03	24.97	9.09	40.72	58.40
5	25.59	15.82	12.55	16.52	12.31	42.80	30.50	73.55	78.10
6	25.65	16.35	12.66	16.36	11.85	42.78	31.29	74.58	80.00
7	25.01	15.77	12.24	15.95	11.36	44.68	31.82	75.21	80.25

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	32.68	15.82	13.15	35.14	3.22	53.01
2	26.43	17.18	13.52	40.03	2.83	46.26
3	26.03	16.27	12.45	42.09	3.16	47.55
4	26.29	17.27	14.83	38.56	3.04	45.02
5	53.16	12.62	12.32	20.00	1.89	69.07
6	56.22	11.77	12.01	18.07	1.92	72.27
7	57.55	11.27	11.43	17.96	1.80	71.71

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	11.05	17.50	0.97	9.85	5.27	7.15	4.82	3.10	51.35
2	11.02	21.12	0.99	12.03	5.47	9.48	5.35	4.16	41.40
3	13.52	25.90	1.12	14.51	6.29	11.51	6.11	5.23	29.33
4	16.49	27.71	1.40	14.99	7.35	11.21	7.74	5.72	23.88
5	24.73	17.49	3.70	9.04	11.74	4.43	9.29	2.70	41.62
6	24.78	18.06	3.83	9.01	11.79	4.21	9.16	2.37	41.57
7	24.19	17.44	3.77	8.66	11.60	4.01	9.02	2.25	43.46

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	8.74	47.67	43.59	17.7	160.0
2	8.38	46.34	45.28	18.4	155.9
3	8.29	46.50	45.21	19.7	145.5
4	8.48	44.56	46.96	22.3	135.4
5	14.96	47.48	37.56	23.7	96.0
6	15.44	47.59	36.97	23.7	95.7
7	15.58	47.96	36.46	25.7	106.3

Table 17 Results with the Sasol catalyst 3, hard wax

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 28
4	experiment number 87
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 17 Ergebnisse mit dem Sasol-Katalysator 3; Hartwachs

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1 2 KATALYSATOR-NR. 3 29 VERSUCHS-NR. 4 P7 SUSPENSIONS-VOL. 5 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN STD. 25	DAUER 7 STD.	ANA-LYS. ZAHL 8	TEMP. 9 GRD.C 26	DRUCK 10 BAR	H2+CO 10a EINS. NL/L*H	FRISCH 11 -GAS NL/L*H	REST- 12 GAS NL/L*H	KREIS 13 -LAUF VERH.	CO/H2 14 FRISCH -GAS	CO/H2 15 REST- GAS	CO/H2 16 UMSATZ -VERH.	GAS-UMSAETZE 17 % VOM EINSATZ CO	H2	CO+H2
1	22.02.	16.	18.	8.	319.	16.	310.	310.	109.	1.31	0.4420	0.1212	0.5830	91.62	69.46	76.25
2	23.02.	7.	18.	18.	318.	16.	313.	313.	104.	1.31	0.4490	0.1360	0.5677	91.58	72.27	78.25
3	23.02.	18.	5.	5.	318.	16.	315.	315.	105.	1.31	0.4506	0.1440	0.5615	91.52	73.44	79.06

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	26.24	13.96	10.09	14.38	11.14	50.42	52.30	82.13	82.07	74.41	3.70	3.96	15.96	1.96	90.66
2	26.14	15.35	10.45	14.62	10.91	48.68	49.17	82.01	82.63	75.24	3.62	3.77	15.40	1.97	91.05
3	25.32	16.78	10.90	14.58	9.80	47.95	47.19	82.27	83.53	76.12	3.49	3.91	14.72	1.75	91.14

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 C2/C4 OLEF.	MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	25.52	15.53	5.13	5.02	11.49	2.62	8.90	2.01	49.29	20.12	45.02	34.86	39.2	153.5
2	25.37	17.04	4.89	5.52	11.63	2.68	8.75	1.91	47.49	19.65	45.86	34.49	39.9	157.1
3	24.53	18.58	4.98	5.97	11.62	2.62	7.90	1.62	46.67	20.30	47.38	32.32	38.8	158.4

Table 18a Results with the Ruhrchemie catalyst LP 5/76; part 1

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 21
4 experiment number 62
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a H2 + CO charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 18a Ergebnisse mit dem Ruhrchemie-Katalysator LP 5/76; Teil 1

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1 / KATALYSATOR-NR. 21 / VERSUCHS-NR. 62 / SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG (4)	BEGINN STD. (5)	DAUER STD. (7)	ANA LYS. ZAHL (8)	TEMP. GRD.C (9)	DRUCK BAR (10)	H2+CO FEINS. NL/LSH (10a)	FRISCH -GAS NL/LSH (11)	REST- GAS NL/LSH (12)	KREIS -LAUF VERH. (13)	CO/H2 FRISCH -GAS (14)	CO/H2 REST- GAS (15)	CO/H2 UMSATZ -VERH. (16)	GAS-UMSAETZE (17) % VOM EINSATZ CO	H2	CO+H2
1	25.08.	17.	24.	23.	268.	15.	347.	347.	201.	0.37	1.0453	0.8411	1.2120	69.82	55.04	59.33
2	26.08.	16.	24.	24.	268.	15.	353.	353.	200.	0.37	1.0463	0.7912	1.2334	67.09	56.91	62.12
3	30.08.	11.	20.	8.	278.	15.	327.	327.	175.	0.37	0.9592	0.4497	1.3511	80.22	56.96	67.24
4	31.08.	11.	20.	20.	278.	15.	332.	332.	183.	0.37	0.9779	0.4944	1.3709	77.34	55.17	66.13
5	1.09.	13.	20.	15.	278.	15.	334.	334.	184.	0.37	0.9866	0.5032	1.3679	77.61	55.91	66.66
6	2.09.	8.	20.	20.	278.	15.	335.	335.	181.	0.37	0.9737	0.4943	1.3291	78.14	57.07	67.45
7	3.09.	4.	20.	20.	278.	15.	333.	333.	180.	0.37	0.9754	0.5003	1.3309	78.05	57.20	67.49
8	7.09.	8.	22.	22.	288.	15.	343.	343.	175.	0.37	1.0410	0.5598	1.3156	80.28	63.33	71.97
9	8.09.	11.	22.	17.	288.	15.	333.	333.	171.	0.37	1.0268	0.5084	1.3319	80.76	61.22	71.11
10	9.09.	4.	22.	22.	288.	15.	339.	339.	172.	0.37	0.9908	0.5119	1.2586	79.77	62.31	71.00
11	10.09.	2.	22.	18.	287.	15.	332.	332.	168.	0.37	0.9635	0.4556	1.3012	81.12	60.07	70.43

NR.	C2/C4 OLEF.	SELEKTIVITAETEN (18) % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN (19) C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION (20) C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	15.79	5.87	6.57	8.58	6.85	72.13	51.88	81.04	79.24	63.93	4.33	6.02	18.68	2.04	86.93
2	15.71	6.34	6.82	8.85	6.83	71.17	47.90	79.99	78.42	64.86	4.99	6.93	19.43	1.95	85.96
3	17.35	7.22	9.39	13.61	0.15	66.02	36.91	75.50	77.09	57.51	9.11	10.44	20.97	1.95	74.61
4	16.17	7.46	7.77	10.24	7.30	67.13	34.55	76.12	77.03	56.99	8.81	11.20	21.20	1.81	74.91
5	17.30	7.77	7.93	10.95	8.50	64.36	32.50	74.87	76.67	55.82	9.89	10.96	21.15	1.58	72.81
6	17.78	8.19	8.19	11.46	9.10	63.06	30.41	73.41	75.57	52.78	11.00	11.79	22.11	1.72	69.94
7	18.51	8.10	8.22	11.56	9.96	62.16	30.37	73.20	75.85	49.96	12.14	12.85	22.62	1.52	65.74
8	20.76	8.02	8.66	12.20	9.08	61.25	38.31	78.50	79.79	57.17	10.32	12.21	18.89	1.41	71.74
9	19.91	7.79	7.90	11.26	9.34	64.41	41.98	79.93	80.26	59.10	9.94	11.21	18.31	1.43	73.64
10	19.49	7.96	7.92	11.12	8.73	65.16	44.57	80.71	79.94	60.92	8.94	10.09	18.66	1.40	76.20
11	18.37	6.19	7.24	10.04	8.24	68.29	48.42	81.46	81.21	63.52	8.25	9.44	17.28	1.51	78.22

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES (21) MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H10	C4H10	C5+	ZUSAMMENSETZUNG (22) DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN (23) G/NM3(EG) C2/4-O	C1+
1	15.54	6.61	3.35	3.34	6.94	1.48	5.34	1.45	71.39	21.59	44.07	34.39	18.7	121.6
2	15.44	7.13	3.21	3.74	6.96	1.82	5.28	1.49	70.38	20.78	45.05	34.17	19.6	126.7
3	17.00	8.09	2.89	5.30	7.95	2.56	6.16	1.90	65.14	17.02	46.77	36.21	23.6	139.7
4	15.84	8.36	2.44	5.36	7.64	2.51	5.57	1.72	66.21	16.65	48.71	35.13	21.3	134.4
5	16.93	8.72	2.52	5.62	8.03	2.93	6.39	2.01	63.91	16.91	47.40	37.69	22.9	135.3
6	17.38	9.16	2.44	5.97	8.22	3.12	6.72	2.25	62.11	16.01	47.31	38.68	23.8	136.7
7	18.10	9.07	2.44	6.03	8.28	3.17	7.29	2.44	61.22	13.49	45.71	40.80	24.9	136.9
8	20.34	8.99	3.25	5.61	9.39	2.69	7.71	2.03	60.35	15.97	46.12	37.91	29.7	146.2
9	19.44	7.96	3.25	4.89	8.43	2.32	7.36	1.88	63.57	16.70	45.43	37.86	28.1	144.9
10	19.13	7.93	3.47	4.62	8.81	2.21	6.35	1.77	64.33	15.11	46.07	38.82	27.7	144.6
11	19.07	6.97	3.45	3.94	9.05	1.92	6.58	1.58	67.53	19.07	49.52	31.41	26.8	143.7

Table 18b Results of the Ruhrchemie catalyst LP 5/76; part 2

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 21
4 experiment number 62
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 18b Ergebnisse mit dem Ruhrchemie-Katalysator LP 5/76; Teil 2

PROGRAMM-ST. 540 1 FLUESSIGPHASE-REAKTOR-NR. 2 1 KATALYSATOR-NR. 3 21 VERSUCHS-NR. 4 62 SUSPENSIONS-VOL. 5 3.000 L

NR.	BEGINN 6 TAG 14	BEGINN 6 STD. 15	DAUER 7 STD.	ANA-LYS. ZAHL 8	TEMP. 9 GRD.C 24	DRUCK 10 BAR	H2/CO 10a FEINS. NL/LGH	FRISCH 11 -GAS NL/LGH	REST- 12 GAS NL/LGH	PREIS 13 -LAUF VERM.	CO/H2 FRISCH/4 -GAS	CO/H2 REST-15 GAS	CO/H2 UMSATZ 16 -VERH.	GAS-UMSAETZE 17 % VOM EINSATZ CO	H2	CO+H2
1	14.09.	12.	21.	21.	295.	15.	337.	337.	168.	0.37	0.9986	0.3979	1.3491	84.98	62.29	73.60
2	15.09.	9.	21.	21.	296.	15.	336.	336.	169.	0.37	0.9989	0.3744	1.3625	84.21	63.29	74.69
3	16.09.	6.	21.	21.	296.	15.	335.	335.	167.	0.37	0.9956	0.3647	1.3609	86.24	63.93	74.11
4	17.09.	3.	21.	21.	296.	15.	336.	336.	169.	0.37	0.9949	0.3743	1.3725	85.76	62.16	73.93
5	20.09.	13.	22.	20.	295.	15.	330.	393.	163.	0.37	0.9810	0.3693	1.3456	83.94	62.86	74.19
6	21.09.	9.	22.	22.	305.	15.	331.	331.	164.	0.37	0.9897	0.3922	1.3723	86.66	62.91	74.62
7	22.09.	7.	22.	22.	304.	15.	332.	332.	168.	0.37	0.9859	0.3593	1.3904	85.76	60.89	73.21
8	23.09.	5.	22.	21.	304.	15.	330.	330.	170.	0.37	0.9748	0.3850	1.3944	83.79	58.76	71.19
9	24.09.	2.	22.	22.	304.	15.	332.	331.	174.	0.37	0.9839	0.3444	1.4036	82.66	56.92	69.35
10	27.09.	13.	22.	20.	315.	15.	333.	333.	166.	0.37	0.9910	0.3615	1.3925	85.93	61.23	74.53
11	28.09.	9.	22.	22.	315.	15.	331.	331.	163.	0.37	0.9821	0.3776	1.3716	87.04	63.34	74.59
12	29.09.	7.	22.	21.	316.	15.	329.	329.	164.	0.37	0.9907	0.3602	1.3851	86.52	61.49	74.15
13	30.09.	5.	22.	22.	316.	15.	332.	332.	171.	0.37	0.9908	0.3759	1.3974	85.49	63.17	73.49
14	1.10.	3.	22.	19.	316.	15.	332.	332.	167.	0.37	0.9787	0.3449	1.3828	83.73	58.24	69.51

VL.	C2/C4 OLEF.	SELEKTIVITAETEN: % VON CO+H2 18 C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	23.79	7.14	8.43	11.38	9.28	63.57	46.37	81.80	81.31	64.04	8.04	8.41	17.35	1.36	79.75
2	23.95	7.48	8.57	11.60	9.35	63.00	44.93	81.65	81.55	65.45	7.69	8.41	16.99	1.47	80.76
3	22.15	7.87	9.16	12.37	9.90	60.69	44.32	81.35	81.89	65.93	7.48	8.49	16.61	1.49	80.51
4	22.53	7.58	9.32	12.66	9.99	60.22	44.49	81.31	82.09	65.56	7.89	8.64	16.48	1.44	79.86
5	23.99	7.61	9.39	12.56	10.09	60.35	42.51	83.60	85.08	75.44	4.34	5.28	13.16	1.78	90.69
6	23.68	7.28	9.19	12.21	9.76	61.36	53.69	83.93	85.12	73.09	5.39	6.66	13.32	1.56	89.86
7	23.36	7.27	9.13	11.85	9.91	61.84	54.12	83.71	85.76	74.64	4.93	6.37	12.66	1.58	87.93
8	22.02	6.30	8.45	10.83	9.20	64.72	58.70	84.69	85.70	74.37	4.94	6.38	12.74	1.56	86.77
9	21.50	6.72	8.43	10.77	8.27	65.32	67.83	85.16	85.81	75.49	4.17	5.36	13.41	1.57	88.79
10	24.72	7.09	9.39	12.46	9.42	61.64	64.20	85.72	85.38	75.46	4.94	6.26	13.14	1.78	88.59
11	24.76	7.20	9.41	12.56	9.85	60.99	60.14	85.12	85.12	73.08	5.34	6.66	13.32	1.56	85.96
12	24.95	7.09	9.49	12.44	9.65	61.26	61.78	85.70	85.76	74.64	4.93	6.32	12.66	1.59	87.03
13	24.74	7.07	9.42	12.44	9.55	61.53	62.49	85.82	85.70	74.37	4.96	6.38	12.74	1.56	86.77
14	24.63	7.44	9.35	12.41	9.50	61.10	63.20	86.59	85.21	74.35	4.19	6.09	13.11	1.68	87.29

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES 21 MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8	AUSBEUTEN GRAMM/CBM 23 C2/4-0	C1+
1	20.60	8.24	3.15	4.74	9.14	2.13	7.41	1.78	67.73	19.89	44.81	36.70	30.6	149.9
2	20.58	8.39	3.28	4.96	9.29	2.19	7.48	1.75	67.35	19.41	44.19	36.40	31.3	152.1
3	21.72	8.83	3.08	5.36	9.96	2.37	7.87	1.90	59.92	19.33	45.42	36.25	32.7	155.7
4	22.15	8.84	4.06	5.49	10.39	2.44	7.99	1.81	59.34	18.35	45.56	36.09	33.3	153.3
5	23.56	8.44	4.94	4.69	10.29	2.15	8.43	1.53	59.53	20.55	43.68	35.77	35.6	151.2
6	23.25	9.18	4.85	4.49	10.07	2.02	8.33	1.51	60.55	20.86	43.51	35.64	34.3	151.0
7	22.96	8.17	4.85	4.41	9.75	1.99	8.15	1.64	61.03	21.14	42.48	36.38	34.3	149.4
8	21.67	7.65	4.38	3.68	9.03	1.71	7.76	1.34	63.99	22.31	41.67	35.82	31.5	144.5
9	21.16	7.56	5.21	3.33	9.03	1.65	6.92	1.26	65.06	24.67	42.67	32.70	30.9	141.7
10	24.12	7.99	5.93	3.54	10.53	1.93	7.89	1.49	60.89	24.38	43.19	32.43	34.5	150.1
11	24.34	8.09	5.56	3.95	10.56	1.90	8.24	1.49	60.22	22.85	43.30	33.85	37.1	152.2
12	24.46	7.98	5.74	3.81	10.57	1.85	8.14	1.40	60.51	23.49	43.23	33.30	37.0	151.4
13	24.34	7.95	5.79	3.72	10.50	1.83	8.05	1.39	60.78	23.78	43.14	33.09	36.9	144.3
14	24.22	8.37	5.94	3.69	10.37	1.87	7.96	1.43	60.37	24.53	42.61	32.86	34.9	140.8

Table 19 Results with the Ruhrchemie catalyst LP 5/77

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 29
4 experiment number 89
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 19 Ergebnisse mit dem Ruhrchemie-Katalysator LP 5/77

PROGRAMM-NR. 540 (1) FLUESSIGPHASE-REAKTOR-NR. 1. (2) KATALYSATOR-NR. (3) 29 VERSUCHS-NR. (4) 89 SUSPENSIONS-VOL. (5) 3.000 L

NR.	BEGINN (6) TAG	BEGINN (6) STD.	DAUER (7) STD.	ANALYS. (8) ZAHL	TEMP. (9) GRD.C	DRUCK (10) BAR	H2+CO EINS. (10a) NL/L*H	FRISCH-GAS (11) NL/L*H	REST-GAS (12) NL/L*H	KREIS-LAUF (13) VERH.	CO/H2 FRISCH-GAS (14)	CO/H2 REST-GAS (15)	CO/H2 UMSATZ (16) -VERH.	GAS-UMSAETZE % VON EINSATZ (17) CO	H2	CO+H2
1	15.02.	11.	6.	6.	319.	21.	324.	324.	272.	0.0	1.0236	0.8554	1.7542	33.66	19.83	26.86
2	15.02.	17.	11.	11.	319.	21.	324.	324.	206.	0.0	1.0579	0.9136	1.8884	26.28	14.71	20.68
3	16.02.	4.	18.	18.	318.	21.	324.	324.	292.	0.0	1.0761	0.9505	1.9259	22.55	12.57	17.74
4	16.02.	22.	11.	11.	318.	21.	321.	321.	285.	0.0	1.0524	0.9311	2.0811	20.96	13.55	15.83
5	2.03.	16.	22.	19.	318.	11.	166.	166.	139.	0.0	1.0831	0.7855	2.2179	42.24	20.57	31.82
6	3.03.	11.	20.	20.	317.	11.	167.	167.	142.	0.0	1.0838	0.7841	2.4333	41.29	18.48	33.37
7	4.03.	7.	5.	5.	317.	11.	168.	168.	144.	0.0	1.0560	0.7589	2.6461	39.34	15.70	27.74
8	7.03.	16.	10.	14.	320.	21.	182.	182.	123.	2.0	0.9837	0.6745	1.5200	61.99	40.11	50.95
9	8.03.	6.	18.	18.	320.	21.	181.	181.	128.	0.0	0.9962	0.6814	1.5301	56.96	37.09	47.31
10	9.03.	0.	18.	18.	320.	21.	182.	182.	133.	0.0	0.9886	0.6957	1.5465	53.33	33.64	43.41
11	10.03.	18.	18.	18.	319.	21.	182.	182.	136.	0.0	0.9871	0.7104	1.5511	50.59	32.20	41.33
12	11.03.	12.	20.	20.	319.	21.	182.	182.	139.	0.0	0.9730	0.7158	1.5625	48.25	30.05	39.03

NR.	C2/C4 OLEF.	SELEKTIVITAETEN (18) % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN (19) C2	C3	C4
1	32.21	8.45	10.38	15.51	13.20	52.76	77.39	85.87	84.04
2	29.69	8.75	10.17	13.64	12.74	54.69	76.15	84.18	82.02
3	31.61	9.50	10.71	14.27	14.09	51.42	75.05	83.42	82.94
4	33.48	10.81	11.67	15.49	14.55	47.29	74.50	83.31	82.03
5	34.69	11.31	11.92	16.17	15.48	45.11	67.41	83.69	84.73
6	37.75	12.00	12.71	17.49	17.41	40.40	66.97	83.29	84.29
7	39.38	13.34	13.82	18.93	17.37	36.67	65.48	82.79	84.86
8	28.41	10.24	9.97	14.12	13.19	52.57	61.49	81.63	82.14
9	29.50	10.78	10.27	14.68	13.84	50.43	60.41	81.26	82.13
10	28.99	11.84	10.74	15.13	12.28	50.04	59.39	81.46	83.99
11	28.58	12.08	10.71	14.98	12.09	50.13	58.67	81.17	83.85
12	29.33	12.68	11.00	15.31	12.38	48.63	57.83	80.56	83.24

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION (20) TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	73.40	6.38	4.56	14.38	1.57	87.34
2	76.29	3.24	2.48	16.59	1.39	91.01
3	76.75	3.48	2.71	15.46	1.59	92.54
4	76.74	2.77	2.51	16.22	1.75	93.55
5	71.30	6.67	6.76	13.59	1.67	84.15
6	70.81	6.88	6.59	13.88	1.84	84.02
7	72.84	6.09	5.92	13.64	1.50	85.84
8	69.75	6.23	6.16	16.21	1.65	84.91
9	69.07	6.57	6.49	16.34	1.53	84.10
10	74.36	4.92	4.71	15.43	0.58	88.54
11	73.82	5.05	4.99	15.56	0.58	88.33
12	73.33	5.10	4.82	15.98	0.77	88.09

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES (21) MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	31.64	9.50	7.67	2.40	13.09	2.26	10.90	2.14	52.06
2	29.13	9.82	7.50	2.55	11.27	2.22	10.26	2.33	53.95
3	31.01	10.65	7.98	2.81	11.67	2.43	11.46	2.44	50.66
4	32.95	12.09	8.65	3.17	12.62	2.65	11.68	2.65	46.49
5	33.91	12.64	7.96	4.07	13.23	2.73	12.82	2.39	44.28
6	36.84	13.40	8.31	4.39	14.22	2.99	14.32	2.77	39.61
7	38.36	14.96	8.84	4.95	15.24	3.32	14.28	2.44	35.87
8	27.80	11.46	5.99	4.02	11.29	2.66	10.52	2.37	51.69
9	28.83	12.05	6.07	4.26	11.66	2.82	11.11	2.50	49.54
10	28.29	13.21	6.22	4.57	12.21	2.86	10.37	1.99	49.07
11	27.09	13.48	6.13	4.63	11.97	2.99	9.89	1.97	49.14
12	29.27	14.13	6.29	4.84	12.52	3.24	10.05	2.09	47.63

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE (22) % C2H4	% C3H6	% C4H8	AUSBEUTEN GRAMM/M3(I)G (23) C2/4-O	C1+
1	24.23	41.34	34.43	17.3	54.7
2	26.10	39.69	35.22	12.2	42.1
3	25.42	37.62	36.96	11.2	36.1
4	26.25	28.30	35.44	10.6	32.1
5	23.17	39.01	37.82	21.9	64.4
6	22.55	38.58	38.87	22.6	61.4
7	23.05	39.73	37.22	21.5	56.2
8	21.57	40.57	37.86	28.7	103.3
9	21.04	40.45	38.52	27.5	95.2
10	21.97	42.44	35.58	24.8	87.8
11	21.69	42.55	35.46	23.3	83.5
12	21.93	42.53	35.54	22.3	78.8

Table 20 Results with the Ruhrchemie catalyst LP 14/77

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 32
4 experiment number 101
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

ab. 20 Ergebnisse mit dem Ruhrchemie-Katalysator LP 14/77

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 32 3 VERSUCHS-NR. 101 4 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD.	ANA-LYS. ZAHL 8	TEMP. 9 GRD.C 26	DRUCK 10 BAR	H2+CO 10a FRISCH-GAS NL/L*H	H2+CO 10a REST-GAS NL/L*H	KREIS-LAUF 13 VERH.	CO/H2 14 FRISCH-GAS	CO/H2 15 REST-GAS	CO/H2 16 UMSATZ-VERH.	GAS-UMSAETZE 17 % VOM EINSATZ CO	H2	CO+H2
1	3.06.	5.	5.	4.	311.	11.	336.	336.	0.0	1.0764	0.9961	1.7103	17.97	11.25	14.69
2	3.06.	11.	4.	4.	312.	11.	336.	336.	0.0	1.0385	1.0011	1.7299	19.07	12.00	15.69
3	3.06.	15.	10.	10.	312.	11.	334.	334.	0.0	1.0397	1.0198	1.5732	18.43	13.90	16.79
4	6.06.	17.	14.	14.	313.	21.	317.	317.	0.0	1.0348	0.9795	1.3218	20.63	16.15	18.43
5	7.06.	3.	14.	14.	312.	21.	316.	316.	0.0	1.0341	0.9971	1.2401	18.24	15.21	16.75
6	7.06.	17.	16.	16.	313.	21.	317.	317.	0.0	1.0327	1.0012	1.2176	17.13	14.53	15.85

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE 19 DER FRAKTIONEN C2	C3	C4
1	22.08	5.74	8.01	9.72	7.90	68.63	85.92	88.02	84.12
2	22.48	5.58	7.92	9.78	8.31	69.42	85.68	88.41	84.94
3	20.24	4.94	7.03	8.79	7.71	71.56	85.99	88.42	83.74
4	19.31	6.69	7.19	9.02	7.40	69.78	78.34	83.36	78.63
5	19.06	6.61	6.81	8.63	7.29	70.67	77.13	82.98	77.49
6	18.29	6.82	7.07	8.82	7.43	69.86	75.40	82.26	76.72

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	79.47	1.92	2.73	13.85	2.03	94.48
2	82.20	1.56	1.18	13.05	2.01	96.78
3	91.19	0.51	2.03	14.19	2.09	96.96
4	76.27	0.14	2.22	18.86	2.51	97.00
5	74.00	0.50	3.99	20.09	2.43	95.50
6	72.88	0.79	3.05	20.82	2.46	94.99

NR.	ZUSAMMENSETZUNG DES ST.-PRODUKTES 21 C2/C4 OLEF.	MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	21.79	6.48	6.78	1.20	8.45	1.20	6.56	1.28	68.05
2	22.20	6.30	6.70	1.20	8.53	1.17	6.97	1.28	67.85
3	20.20	5.59	5.94	1.04	7.69	1.05	6.38	1.28	71.04
4	18.60	7.53	5.48	1.62	7.43	1.55	5.73	1.61	69.08
5	17.77	7.43	5.17	1.64	7.04	1.51	5.56	1.67	69.97
6	17.93	7.67	5.24	1.83	7.13	1.61	5.61	1.76	69.14

NR.	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	31.12	38.77	30.11	6.6	30.1
2	30.17	38.45	31.38	7.1	32.2
3	29.71	38.41	31.89	6.9	34.5
4	29.44	39.78	30.78	7.0	37.6
5	29.08	39.65	31.27	6.1	34.2
6	29.16	39.67	31.17	5.8	32.4

Table 21 Results with the Ruhrchemie catalyst LP 8/78 in the fixed-bed reactor

1 program FT 540
2 fixed-bed reactor number 2
3 catalyst number 40
4 experiment number 132
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 21 Ergebnisse mit dem Ruhrchemie-Katalysator LP 8/73 im Flüssigphasereaktor

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 2. 2 KATALYSATOR-NR. 40 3 VERSUCHS-NR. 132 4 SUSPENSIONS-VOL. 5 5.000 L

NR.	BEGINN 6 TAG 24	BEGINN 6 STD. 25	DAUER 7 STD.	ANALYS. ZAHL 8	TEMP. 9 GRD.C	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH -GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREIS -LAUF 13 VERH.	CO/H2 FRISCH -GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ -VERH. 16	GAS-UNSAETZE 17 % VOM EINSATZ CO	H2	CO+H2
1	2.08.	16.	19.	16.	320.	20.	412.	428.	371.	0.0	0.9307	0.8341	1.3922	25.88	17.30	21.44
2	3.08.	10.	9.	8.	331.	20.	409.	425.	353.	0.0	0.9195	0.7694	1.4481	34.84	22.12	28.21
3	4.08.	18.	14.	10.	340.	20.	414.	431.	350.	0.0	0.9195	0.7435	1.4491	39.32	24.95	31.83
4	4.08.	8.	10.	9.	340.	20.	274.	291.	235.	0.0	0.9227	0.7253	1.4729	42.15	26.41	33.96
5	21.08.	18.	10.	8.	351.	21.	273.	291.	244.	0.0	0.9413	0.7934	1.4476	34.76	22.61	28.50
6	22.08.	10.	11.	6.	361.	21.	288.	307.	239.	0.0	0.9356	0.7698	1.3036	43.28	31.06	36.97
7	23.08.	10.	12.	6.	372.	21.	141.	152.	107.	0.0	0.9193	0.5797	1.3421	65.02	44.54	54.35
8	23.08.	22.	12.	6.	373.	21.	145.	156.	117.	0.0	0.8793	0.6172	1.3466	55.03	35.93	44.87

NR.	SELEKTIVITAETEN 18. C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4
1	36.08	12.41	13.92	16.18	12.36	45.13	76.94	89.49	88.05
2	38.52	14.16	15.41	17.75	13.16	39.51	72.42	88.89	98.04
3	40.20	15.34	16.84	18.84	13.32	35.66	70.47	88.42	87.65
4	43.30	16.65	19.01	20.81	13.85	29.68	68.07	87.71	87.41
5	37.63	17.69	18.77	18.54	12.27	32.74	70.50	86.06	84.69
6	36.69	17.32	18.23	17.41	11.02	36.02	68.87	85.59	83.80
7	39.43	24.39	21.42	20.57	11.70	19.92	57.02	81.47	79.61
8	40.16	24.34	23.02	19.89	11.68	21.07	62.93	82.20	79.77

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	75.69	6.18	6.18	9.86	2.09	85.96
2	72.59	7.73	7.73	9.88	2.08	82.45
3	71.25	8.20	8.20	10.33	2.02	81.29
4	67.93	9.74	9.74	10.92	1.67	77.72
5	69.82	7.43	7.43	12.58	2.73	82.45
6	67.31	8.25	8.25	13.23	2.96	80.31
7	53.90	12.86	12.86	17.81	2.58	67.70
8	58.69	10.54	10.54	17.37	2.86	73.58

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	35.26	13.87	10.47	3.36	14.15	1.74	10.64	1.50	44.26
2	37.54	15.79	10.87	4.44	15.37	2.01	11.29	1.59	38.64
3	39.08	17.06	11.54	5.10	16.20	2.22	11.35	1.66	34.79
4	41.98	19.47	12.55	6.31	17.70	2.60	11.74	1.75	28.89
5	38.38	19.59	12.87	5.69	15.45	2.62	10.06	1.88	31.84
6	35.34	19.19	12.16	5.89	14.43	2.55	8.95	1.79	35.05
7	37.69	26.67	12.76	10.31	16.02	3.82	8.91	2.36	19.15
8	38.43	26.64	13.87	8.75	15.65	3.55	8.92	2.34	20.28

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8
1	29.69	40.14	30.18
2	28.97	40.96	30.07
3	29.53	41.44	29.03
4	29.86	42.17	27.95
5	32.52	40.25	26.21
6	34.23	40.60	25.17
7	33.87	42.50	23.63
8	36.08	40.72	23.20

NR.	AUSBEUTEN G/NM3(IG) 23 C2/C4=0	C1+
1	15.3	43.4
2	21.4	56.9
3	25.0	64.1
4	28.6	68.1
5	21.9	57.1
6	26.3	74.0
7	40.4	107.1
8	34.0	88.6

Table 22 Results with the Ruhrchemie catalyst LP 8/78 in the fixed-bed reactor; first experiment

1	program FT 540
2	fixed-bed reactor number 2
3	catalyst number 40
4	experiment number 4
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 22 Ergebnisse mit dem Ruhrchemie-Katalysator LP 8/78 im Festbettreaktor; 1. Versuch

PROGRAMM FT 540 (1) FESTBETT-REAKTOR-NR. 3. (2) KATALYSATOR-NR. 40 (3) VERSUCHS-NR. 4 (4) KATALYSATOR-VOL. 0.050 L (5)

NR.	BEGINN TAG (6)	BEGINN STD.	DAUER STD. (7)	ANALYS. ZAHL (8)	TEMP. GRD.C (9)	DRUCK BAR (10)	H2+CO EINS. NL/L*H (10a)	FRISCH-GAS NL/L*H (11)	REST-GAS NL/L*H (12)	KREIS-LAUF VERH. (13)	CO/H2 FRISCH-GAS (14)	CO/H2 REST-GAS (15)	CO/H2 UMSATZ -VERH. (16)	GAS-UMSAETZE % VON EINSATZ CO (17)	GAS-UMSAETZE % VON EINSATZ H2	GAS-UMSAETZE % VON EINSATZ CO+H2
1	25.08.	16.	13.	5.	292.	11.	107.	118.	108.	0.0	1.2365	1.2151	1.3746	14.92	13.42	14.25
2	28.08.	20.	12.	4.	304.	11.	99.	110.	78.	0.0	1.2499	0.9394	1.6433	58.79	44.59	52.48
3	29.08.	8.	12.	4.	308.	11.	100.	111.	70.	0.0	1.2440	0.7549	1.6168	73.75	56.74	66.17
4	29.08.	20.	12.	4.	315.	11.	89.	99.	56.	0.0	1.2401	0.5153	1.5802	86.58	67.94	78.26
5	30.08.	9.	24.	6.	320.	11.	91.	101.	56.	0.0	1.2400	0.4425	1.5574	89.94	71.53	81.66
6	1.09.	13.	17.	2.	325.	11.	153.	169.	103.	0.0	1.2556	0.6445	1.6103	78.82	61.15	70.99
7	4.09.	13.	20.	7.	331.	11.	213.	237.	134.	0.0	1.2792	0.4777	1.6175	88.91	70.31	80.75
8	6.09.	12.	24.	7.	331.	11.	480.	534.	306.	0.0	1.2791	0.5154	1.6106	87.80	69.73	79.87
9	7.09.	21.	24.	6.	331.	11.	361.	400.	214.	0.0	1.2045	0.3031	1.5239	91.73	72.48	82.98
10	8.09.	11.	16.	3.	331.	11.	203.	225.	110.	0.0	1.1995	0.2318	1.4291	96.29	80.82	89.26

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ (18) C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN (19) C2	C3	C4
1	25.32	8.60	9.66	11.95	9.30	60.42	73.87	86.60	83.61
2	27.25	9.89	12.27	14.81	11.17	51.86	49.57	83.11	79.30
3	27.17	10.06	12.61	14.92	11.31	51.10	45.16	83.98	79.12
4	26.87	11.19	13.75	16.79	11.99	46.28	33.75	79.28	74.40
5	28.59	12.55	14.96	18.21	12.75	41.53	32.32	78.69	73.92
6	31.67	11.15	13.17	16.42	12.32	46.94	53.91	86.14	85.62
7	34.24	13.12	14.92	19.24	13.75	38.96	44.06	84.11	83.42
8	33.44	14.22	13.90	19.38	14.25	37.65	42.95	81.58	81.81
9	31.59	12.85	12.44	18.25	14.07	42.38	41.79	82.15	80.94
10	28.05	12.93	11.69	18.11	13.67	43.61	30.14	78.03	76.04

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION (20) TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	50.92	16.34	16.34	10.64	5.75	60.91
2	34.63	22.34	22.34	18.06	2.64	43.67
3	32.12	23.50	23.50	18.83	2.05	40.59
4	27.30	23.55	23.55	23.46	2.14	36.70
5	26.88	23.52	23.52	24.08	1.99	36.36
6	44.24	20.69	20.69	13.18	1.20	51.67
7	40.79	21.31	21.31	15.36	1.22	48.90
8	43.93	18.94	18.94	17.09	1.10	53.69
9	40.81	20.07	20.07	18.02	1.04	50.42
10	33.17	21.43	21.43	22.81	1.15	43.63

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES (21) MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	24.87	9.67	7.01	2.66	10.14	1.65	7.70	1.56	59.61
2	26.62	11.05	5.94	6.48	12.03	2.55	0.65	2.34	50.95
3	26.52	11.24	5.56	7.23	12.23	2.44	0.73	2.39	50.18
4	26.12	12.44	4.51	9.49	12.94	3.54	8.67	3.09	45.31
5	27.72	13.91	4.69	10.52	13.90	3.94	9.13	3.34	40.57
6	30.92	12.45	6.02	6.48	13.81	2.33	10.30	1.79	46.03
7	33.27	14.58	6.34	8.70	15.73	3.11	11.15	2.30	38.04
8	33.42	16.43	5.79	8.24	15.33	3.63	11.33	2.69	36.60
9	30.71	14.29	5.06	7.55	14.58	3.32	11.07	2.70	41.43
10	27.22	14.35	3.42	8.49	13.72	4.04	10.39	3.29	42.61

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE (22) % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(TG) (23) C2/4-O	C1+
1	28.17	40.87	30.96	7.2	29.0
2	22.32	45.18	32.50	28.3	106.2
3	20.96	46.12	32.93	35.5	133.8
4	17.27	49.53	33.20	41.1	157.4
5	16.91	50.13	32.96	45.4	163.8
6	22.04	44.65	33.31	44.4	143.6
7	19.21	47.28	33.51	54.0	162.4
8	17.86	47.28	34.86	51.9	160.1
9	16.47	47.48	36.06	51.3	167.3
10	12.55	50.39	37.05	48.8	179.2

Table 23 Results with the Ruhrchemie catalyst LP 8/78 in the fixed-bed reactor, second experiment

1	program FT 540
2	fixed-bed reactor number 4
3	catalyst number 40
4	experiment number 14
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 23 Ergebnisse mit dem Ruhrchemie-Katalysator LP 8/78 im Festbettreaktor; 2. Versuch

PROGRAMM FT 540 / FESTBETT-REAKTOR-NR. 4. 2 KATALYSATOR-NR. 40 3 VERSUCHS-NR. 14 4 KATALYSATOR-VOL. 5 0.050 L

NR.	BEGINN TAG 6	STD. 7	DAUER STD. 8	ANALYS. ZAHL	TEMP. GRD.C 9	DRUCK BAR 10	H2+CO EINS 10a NL/L*H	FRISCH-GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREISLAUF VERH.	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSAETZE % VOM EINSATZ 17 CO	H2	CO+H2
1	25.01.	11.	2.	3.	340.	11.	103.	114.	90.	0.0	0.9737	0.7223	1.5574	48.15	30.10	39.01
2	25.01.	14.	0.	6.	340.	11.	108.	120.	91.	0.0	0.9809	0.6710	1.5787	54.94	34.13	44.43
3	26.01.	7.	21.	20.	340.	11.	100.	111.	75.	0.0	0.9772	0.4940	1.5071	73.55	47.69	60.47
4	31.01.	9.	20.	15.	340.	11.	103.	114.	68.	0.0	0.9791	0.3246	1.4237	86.59	59.54	72.92
5	1.02.	6.	30.	15.	340.	11.	106.	118.	69.	0.0	0.9779	0.3123	1.4162	87.22	60.29	73.66
6	5.02.	10.	48.	15.	340.	11.	91.	101.	50.	0.0	0.9846	0.2098	1.4151	88.74	61.74	75.14
7	9.02.	14.	113.	18.	340.	11.	206.	228.	154.	0.0	0.9831	0.5309	1.5039	71.11	46.49	58.69
8	14.02.	10.	47.	12.	353.	11.	204.	226.	149.	0.0	0.9843	0.4961	1.4746	74.74	49.89	62.22
9	16.02.	12.	86.	10.	350.	11.	115.	127.	82.	0.0	1.1140	0.5947	1.5750	74.90	52.98	64.53
10	20.02.	12.	21.	8.	350.	11.	47.	52.	31.	0.0	1.1185	0.4590	1.5202	84.47	62.16	73.94

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE 19 DER FRAKTIONEN C2	C3	C4
1	42.60	13.78	16.64	21.13	10.13	30.32	60.10	82.13	84.07
2	42.40	14.06	16.44	21.18	18.08	30.24	58.46	83.09	84.37
3	42.54	15.85	16.09	22.64	13.41	27.00	50.55	82.59	85.32
4	38.63	15.93	14.24	21.92	18.10	29.80	41.43	81.21	82.47
5	38.00	15.81	13.99	21.81	17.95	30.44	40.81	80.86	81.66
6	36.05	15.45	13.25	20.87	16.99	33.42	40.12	80.96	81.37
7	38.31	15.10	13.19	20.15	17.28	34.29	53.37	84.80	84.99
8	38.45	16.05	14.32	21.13	17.03	30.67	49.87	82.73	81.19
9	35.75	15.30	12.92	20.18	17.51	34.09	45.61	79.75	78.62
10	33.48	15.55	12.66	20.54	18.27	32.98	35.86	75.11	73.94

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	44.08	20.00	20.00	14.87	1.06	52.43
2	43.05	20.51	20.51	14.53	1.41	51.21
3	42.36	21.48	21.48	13.70	0.98	49.65
4	43.02	19.72	19.72	16.53	1.00	52.17
5	43.25	19.21	19.21	17.31	1.03	52.96
6	43.82	18.77	18.77	17.60	1.03	53.86
7	56.13	14.43	14.43	14.07	0.95	66.05
8	51.49	14.85	14.85	17.74	1.07	63.42
9	43.04	17.79	17.79	20.21	1.16	54.75
10	34.61	19.66	19.66	24.68	1.38	46.81

NR.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 C2/C4 OLEF.	MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	41.41	15.32	9.73	6.90	16.87	3.05	14.81	2.91	29.61
2	41.20	15.63	9.34	7.11	17.10	3.65	14.77	2.90	29.52
3	41.20	17.56	7.88	8.26	18.11	4.00	15.21	2.71	26.26
4	37.38	17.63	5.71	8.65	17.22	4.18	14.44	3.18	28.98
5	36.77	17.50	5.53	8.59	17.06	4.23	14.18	3.30	29.61
6	34.91	17.11	5.15	8.24	16.38	4.04	13.39	3.18	32.53
7	37.68	16.76	6.33	8.40	15.59	3.12	14.26	2.61	33.43
8	37.18	19.64	6.91	7.44	16.90	3.70	13.37	3.21	29.83
9	34.63	16.95	5.71	7.30	15.58	4.15	13.34	3.76	33.23
10	32.35	17.18	4.39	8.41	14.91	5.18	13.05	4.77	32.11

NR.	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8
1	23.50	40.73	35.77
2	22.66	41.50	35.84
3	19.12	43.96	36.92
4	15.28	46.08	38.64
5	15.03	46.40	38.57
6	14.75	46.91	38.35
7	18.13	44.04	37.83
8	18.58	45.46	35.96
9	16.48	45.00	38.52
10	13.57	46.09	40.34

NR.	ALKENE 23 G/M3(N) C2/4-C	C4+
1	32.5	78.5
2	36.8	89.3
3	49.9	121.1
4	54.5	145.9
5	54.2	147.4
6	52.5	150.4
7	46.4	117.9
8	46.3	124.4
9	44.6	129.2
10	47.8	147.7

Table 24a Results with the iron whisker catalyst in the liquid phase reactor; part 1

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 41
4 experiment number 138
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a H_2 + CO charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 24a Ergebnisse mit dem Eisen-Whisker-Katalysator für den Flüssigphasereaktor; Teil 1

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 41 VERSUCHS-NR. 139 SUSPENSIONS-VOL. 1.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LH	FRISCH-GAS NL/LH	REST-GAS NL/LH	KREISLAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	4.10.	16.	20.	5.	319.	11.	369.	413.	380.	0.0	0.9618	0.9349	1.1743	14.01	11.40	12.72
2	5.10.	12.	18.	4.	321.	11.	526.	573.	530.	0.0	0.9526	0.8779	1.3726	21.79	15.06	18.30
3	6.10.	14.	9.	1.	321.	11.	713.	761.	666.	0.0	1.0357	0.9132	1.6137	25.32	16.17	20.79
4	9.10.	18.	18.	3.	324.	11.	172.	190.	93.	6.00	0.9722	0.8130	1.0372	76.17	71.40	73.75
5	12.10.	8.	18.	3.	323.	11.	160.	182.	80.	6.00	0.9471	0.7237	1.0133	81.67	76.34	79.73
6	13.10.	13.	8.	3.	323.	11.	161.	173.	78.	6.00	[illegible]	0.8179	1.0666	80.49	75.99	78.23
7	16.10.	21.	20.	5.	323.	11.	176.	195.	91.	6.00	0.9963	0.7335	1.0810	82.06	75.63	78.84
8	18.10.	21.	14.	5.	323.	11.	192.	217.	99.	6.00	0.9416	0.7098	1.0211	80.74	74.45	77.50
9	19.10.	12.	24.	6.	323.	11.	189.	204.	101.	6.00	0.9506	0.7451	1.0500	77.21	70.62	73.95
10	20.10.	11.	15.	5.	324.	11.	213.	233.	115.	6.00	0.9464	0.7366	1.0324	77.36	70.91	74.05
11	23.10.	15.	22.	6.	325.	11.	181.	202.	93.	6.00	0.9711	0.6096	1.0622	81.97	74.15	77.77
12	24.10.	15.	23.	7.	324.	11.	192.	231.	107.	3.00	0.9799	0.6926	1.1272	76.22	66.26	71.19
13	25.10.	14.	24.	9.	324.	11.	191.	204.	127.	1.50	1.0272	0.6633	1.2992	77.91	59.05	65.59
14	26.10.	11.	14.	6.	323.	11.	199.	212.	133.	0.60	1.0607	0.5975	1.4309	73.12	53.19	61.35
15	27.10.	7.	18.	5.	333.	11.	202.	220.	140.	0.60	0.9750	0.5062	1.3660	76.36	54.47	65.29

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	36.78	10.00	10.00	13.96	13.27	51.79	80.30	97.51	97.31	77.23	7.54	7.94	2.18	5.51	83.67
2	31.53	9.30	9.95	12.71	12.00	56.04	87.97	97.57	91.77	77.93	6.79	4.95	2.63	5.69	84.05
3	31.98	9.67	9.96	12.63	11.66	57.13	88.03	93.22	97.33	91.26	8.06	8.04	1.51	1.06	83.47
4	28.51	6.31	8.55	11.76	11.57	[illegible]	84.31	93.56	91.78	85.53	3.12	3.12	6.41	1.81	93.23
5	26.95	6.47	9.30	11.59	10.41	63.22	91.60	92.16	91.12	85.26	2.93	2.93	7.23	1.65	93.57
6	26.70	6.44	8.36	11.61	10.24	63.37	91.46	92.04	90.80	85.06	2.87	2.37	7.20	1.99	93.67
7	29.13	6.78	8.57	12.46	11.47	60.74	76.77	90.34	93.73	82.19	3.09	3.09	8.63	1.47	91.38
8	30.23	6.07	8.75	12.90	12.37	59.11	80.31	91.30	97.51	84.17	3.17	3.17	8.23	1.39	93.00
9	32.09	7.46	9.27	13.66	13.50	56.13	89.73	91.23	92.93	83.08	3.02	3.02	8.35	1.53	93.28
10	31.19	7.13	9.10	13.37	12.97	57.39	80.92	91.27	92.47	84.41	3.01	3.01	8.31	1.27	93.35
11	30.80	7.50	9.16	13.31	12.39	57.55	80.81	91.77	92.47	84.61	3.10	3.10	8.11	1.27	93.17
12	32.17	7.70	9.80	13.84	12.95	55.01	82.07	91.34	92.59	84.97	2.91	2.91	8.32	1.29	93.87
13	32.25	8.33	9.77	13.77	12.69	55.73	83.51	91.47	90.53	85.34	2.60	2.60	8.36	1.11	94.26
14	31.41	8.14	9.81	13.36	12.16	56.53	83.98	91.39	90.17	85.39	2.39	2.37	8.72	1.13	94.69
15	27.50	7.42	10.75	13.83	12.93	53.66	83.34	90.04	88.75	82.98	2.98	2.89	10.11	1.14	93.59

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	34.19	11.34	9.45	1.34	12.70	1.08	12.34	1.34	51.02	27.65	37.14	35.21	8.9	75.9
2	31.02	10.46	9.61	1.26	11.57	0.97	10.33	1.01	55.27	27.77	37.31	34.92	11.6	37.4
3	31.49	9.79	9.61	1.16	11.41	1.09	11.10	0.32	56.57	27.47	36.92	35.61	12.4	42.5
4	29.19	7.13	6.96	1.37	10.94	1.05	13.49	0.97	61.50	24.33	38.47	37.20	42.7	151.4
5	26.61	7.31	6.70	1.61	10.56	0.96	9.37	0.93	62.53	25.17	39.62	35.21	43.1	162.0
6	26.44	7.77	6.71	1.64	10.55	0.96	9.10	0.96	62.73	25.37	39.09	34.73	42.5	163.5
7	27.79	7.45	6.49	2.11	11.09	1.24	10.17	1.19	60.07	23.40	39.95	36.69	44.9	161.5
8	29.60	7.75	6.93	1.82	11.62	1.16	11.34	1.20	58.47	23.42	39.27	37.31	47.0	158.9
9	31.61	8.41	7.37	1.89	12.26	1.29	11.98	1.37	55.45	23.32	38.77	37.89	47.9	151.7
10	30.71	9.26	7.36	1.93	11.99	1.21	11.47	1.26	56.73	23.63	39.01	37.36	46.5	151.6
11	30.35	9.56	7.99	1.96	11.97	1.29	11.39	1.14	56.97	24.32	39.64	36.53	43.3	159.2
12	31.69	8.93	7.60	1.60	12.45	1.24	11.56	1.24	55.23	24.26	39.29	36.47	46.2	145.7
13	31.76	9.05	8.04	1.70	12.41	1.21	11.22	1.23	55.25	25.30	39.34	35.66	47.6	134.1
14	30.92	9.16	8.11	1.66	12.07	1.19	12.80	1.22	55.43	26.22	38.76	34.97	41.1	127.6
15	31.93	13.50	8.49	1.97	12.36	1.39	11.19	1.47	52.91	26.29	38.46	35.05	4. 5	133.1

Table 24b Results with the iron whisker catalyst in the liquid phase reactor; part 2

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 41
4	experiment number 138
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	$H_2 + CO$ charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

24b Ergebnisse mit dem Eisen-Whisker-Katalysator für den Flüssigphasereaktor; Teil 2

CO+H2 FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 3 41 VERSUCHS-NR. 133 4 SUSPENSIONS-VOL.5 3.000 L

BEGINN 6 TAG	DAUER 7 STD.	ANALYS. ZAHL 8	TEMP. 9 GRD.C	DRUCK 10 BAR	H2+CO 10a EINS. NL/L*H	FRISCH -GAS NL/L*H 11	REST- GAS NL/L*H 12	KREIS -LAUF VERH. 13	CO/H2 FRISCH -GAS 14	CO/H2 REST- GAS 15	CO/H2 UMSATZ -VERH. 16	GAS-UMSAETZE % VOM EINSATZ CO 17	H2	CO+H2
13.11. 16.	20.	10.	334.	11.	183.	205.	121.	0.60	0.9767	0.4853	1.3211	79.53	58.80	69.04
14.11. 15.	24.	11.	333.	11.	183.	203.	114.	3.00	0.9428	0.6467	1.0703	79.36	69.90	74.49
15.11. 15.	24.	12.	334.	16.	217.	247.	127.	3.00	0.9154	0.6001	1.0432	81.09	71.15	75.90
16.11. 15.	24.	13.	334.	21.	243.	269.	126.	3.00	0.9029	0.5963	1.0014	83.93	75.67	79.59

C2/C4 OLEF.	SELEKTIVITAETEN 18 % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4
20.09	9.24	10.06	13.07	10.97	56.66	83.16	90.74	38.99
21.33	8.44	9.34	12.75	10.21	59.26	81.27	90.65	89.93
23.16	9.12	9.40	12.91	10.71	57.87	79.71	89.93	85.55
25.87	9.04	9.09	12.32	9.70	59.87	74.13	89.52	94.19

C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
20.48	10.39	8.22	1.79	11.66	1.25	9.60	1.23	55.87
21.89	9.53	7.47	1.84	11.38	1.23	9.04	1.05	58.49
23.56	10.24	7.26	2.11	11.19	1.35	9.00	1.57	57.07
25.40	10.04	6.61	2.47	10.71	1.46	8.98	1.57	59.05

ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
82.82	3.09	3.08	9.81	1.20	93.07
84.59	2.67	2.67	8.82	1.25	94.07
81.81	1.87	1.87	12.81	1.64	95.63
80.46	1.86	1.86	14.09	1.73	95.57

ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8
27.90	39.55	32.55
26.79	40.80	32.41
26.27	41.18	32.55
26.03	42.14	31.82

AUSBEUTEN G/NM3(IG) 23 C2/4-O	C1+
41.5	140.9
42.4	152.2
47.8	154.7
41.2	162.1

Table 25 Results with the iron whisker catalyst in the fixed-bed reactor

1	program FT 540
2	fixed-bed reactor number 3
3	catalyst number 49
4	experiment number 9
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 25 Ergebnisse mit dem Eisen-Whisker-Katalysator für den Festbettreaktor

PROGRAMM FT 943 FESTBETT-REAKTOR-NR. 3. KATALYSATOR-NR. 49 VERSUCHS-NR. 9 KATALYSATOR-VOL. 0.039 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LOH	FRISCH-GAS NL/LOH	REST-GAS NL/LOH	KREIS-LAUF-VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	19.10.	20.	23.	10.	312.	11.	283.	312.	170.	0.0	0.6079	0.0513	1.1137	97.59	52.39	68.67
2	20.10.	20.	0.	7.	311.	11.	466.	514.	291.	0.0	0.6077	0.0967	1.1716	95.25	49.43	66.76
3	23.10.	10.	22.	11.	311.	11.	522.	576.	295.	0.0	0.6071	0.0382	1.0780	97.29	56.90	72.16
4	24.10.	10.	23.	12.	311.	11.	577.	701.	375.	0.0	0.6265	0.0437	1.0504	96.67	53.79	69.59
5	25.10.	9.	8.	4.	314.	11.	874.	964.	526.	0.0	0.6061	0.0495	1.1047	97.14	52.74	65.12
6	27.10.	11.	16.	3.	309.	11.	733.	814.	520.	0.0	1.2411	0.8162	1.7401	68.36	53.23	66.45
7	25.10.	17.	36.	8.	314.	11.	776.	862.	657.	0.0	1.2679	0.3489	1.7205	91.07	67.57	80.71
8	31.10.	9.	23.	4.	315.	11.	692.	667.	526.	0.0	1.2676	1.0395	1.6735	43.16	33.66	35.54
9	6.11.	14.	16.	3.	305.	11.	419.	463.	237.	0.0	0.9972	0.4203	1.5659	79.08	50.36	64.73
10	7.11.	13.	22.	6.	309.	11.	462.	512.	290.	0.0	0.9745	0.2801	1.4541	87.30	57.20	77.26
11	8.11.	16.	21.	5.	339.	11.	465.	516.	293.	0.0	0.9779	0.2635	1.5044	93.57	57.57	72.95
12	9.11.	11.	24.	6.	335.	21.	744.	824.	412.	0.0	0.5744	0.1515	1.3412	95.71	65.17	87.62
13	10.11.	9.	20.	5.	305.	21.	729.	809.	391.	0.0	0.9711	0.1201	1.2956	96.56	72.16	84.18
14	13.11.	11.	21.	9.	295.	21.	410.	469.	250.	0.0	0.9710	0.1488	1.4050	94.74	69.62	79.98
15	14.11.	12.	24.	4.	205.	21.	323.	355.	189.	0.0	0.9742	0.1142	1.4039	98.74	66.18	80.57

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	35.26	7.15	12.60	14.54	14.17	53.95	86.45	91.46	90.41	83.56	3.22	3.22	8.53	1.06	92.87
2	34.55	7.20	10.46	14.16	13.78	54.40	86.73	91.73	93.63	85.01	2.81	2.81	8.33	1.07	93.80
3	31.92	7.95	10.24	13.43	12.33	56.01	83.66	91.09	89.81	85.48	2.16	2.16	5.13	1.06	95.18
4	31.62	7.92	13.37	13.29	12.25	56.47	85.33	91.37	92.03	89.56	3.49	3.49	8.47	1.05	92.26
5	33.47	7.82	9.83	12.91	11.92	57.52	94.57	91.23	93.45	82.41	4.07	4.07	8.52	1.03	91.17
6	29.33	4.52	7.55	12.45	7.84	67.39	86.32	92.14	91.03	85.32	2.35	2.35	7.08	1.10	94.83
7	25.66	4.74	7.73	10.83	9.80	66.89	86.47	92.39	91.47	86.81	2.33	2.33	7.57	3.95	94.90
8	26.13	5.34	7.41	10.59	10.78	65.49	86.22	92.17	89.65	79.94	5.35	5.35	6.22	4.13	89.66
9	33.65	6.50	9.33	12.99	12.34	58.55	82.32	91.37	93.77	84.18	3.25	3.29	8.22	1.00	97.74
10	27.59	7.29	8.99	12.07	10.37	61.59	82.68	91.40	93.66	85.46	2.60	2.60	9.33	1.34	94.27
11	26.36	7.35	8.64	11.95	9.44	61.32	83.45	91.61	90.78	86.06	2.39	2.39	8.26	0.96	94.74
12	23.48	10.33	9.71	13.99	11.23	55.35	72.22	89.24	81.89	81.15	3.86	3.86	9.56	1.17	91.37
13	29.89	11.19	9.83	14.66	12.15	52.17	65.02	88.28	86.84	77.05	4.89	4.89	13.39	1.39	89.73
14	34.36	13.31	13.78	16.74	15.59	43.59	55.65	86.72	86.89	71.51	7.69	7.69	11.88	1.23	82.30
15	31.99	12.91	10.03	18.34	15.51	45.21	45.83	84.43	85.07	65.84	9.62	9.62	13.84	1.39	77.56

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	34.78	8.37	9.04	1.52	13.11	1.28	12.63	1.39	52.56	25.58	37.70	36.32	49.1	141.1
2	34.38	8.13	8.95	1.47	12.81	1.21	12.32	1.32	53.80	26.25	37.62	36.15	46.0	136.8
3	31.46	8.95	8.44	1.77	12.59	1.24	10.90	1.28	55.32	26.83	38.47	34.69	46.4	147.6
4	31.15	8.92	8.36	1.67	11.42	1.23	10.87	1.25	55.79	26.84	38.27	34.89	44.6	143.2
5	30.42	9.11	8.19	1.60	11.49	1.17	10.62	1.16	56.84	26.94	38.14	34.92	43.0	141.4
6	23.39	5.12	6.46	1.39	9.72	0.87	8.91	0.91	66.92	25.75	38.75	35.50	31.2	124.5
7	25.41	5.57	6.62	1.11	9.91	0.85	8.88	0.86	66.43	26.05	39.00	34.95	42.2	166.2
8	25.96	6.24	6.66	1.14	9.65	0.96	9.56	1.14	64.96	25.74	37.31	36.95	19.3	73.9
9	30.24	7.73	7.11	1.72	11.71	1.16	11.23	1.18	57.92	24.15	38.71	37.13	40.1	132.6
10	27.21	8.22	7.13	1.65	10.47	1.07	9.30	0.96	60.59	26.54	39.97	33.39	43.3	140.9
11	26.33	7.37	7.11	1.51	10.44	1.03	9.45	0.89	62.64	27.13	40.15	32.50	39.9	149.6
12	28.92	11.25	6.88	2.01	12.25	1.55	9.83	1.27	54.19	23.18	47.34	33.95	48.3	166.9
13	29.25	12.52	6.29	3.61	12.67	1.76	10.72	1.62	51.74	21.38	43.31	35.29	69.9	172.8
14	33.20	14.83	5.84	4.99	14.15	2.27	13.21	2.06	42.64	17.61	42.62	39.78	53.6	161.4
15	30.77	14.39	4.48	5.67	13.44	2.03	12.85	2.34	44.23	14.56	43.68	41.77	50.0	142.5

Table 26. Results with the Mn-Fe catalyst 1 (Berlin)

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 30
4	experiment number 90
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 26 Ergebnisse mit dem Mn-Fe-Katalysator 1 (Berlin)

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 30 VERSUCHS-NR. 99 SUSPENSIONS-VOL. 3.000 L

NR.	REGION TAG	REGION STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO FINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VON EINSATZ CO	GAS-UMSAETZE % VON EINSATZ H2	GAS-UMSAETZE % VON EINSATZ CO+H2
1	29.03.	22.	2.	2.	296.	11.	339.	339.	275.	0.0	0.9670	0.7952	1.4504	29.33	26.22	32.67
2	29.03.	10.	12.	12.	296.	11.	324.	324.	269.	0.0	1.1496	0.9784	1.6506	36.54	25.45	31.38
3	29.03.	14.	11.	8.	286.	11.	339.	339.	286.	0.0	1.2492	1.2240	1.3297	25.38	23.84	24.70
4	4.04.	21.	10.	10.	286.	11.	339.	339.	288.	0.0	1.2591	1.2097	1.4183	26.65	23.67	25.34
5	28.03.	22.	12.	12.	296.	11.	339.	339.	278.	0.0	1.2473	1.1352	1.5180	35.62	29.27	32.80
6	5.04.	12.	12.	11.	296.	11.	340.	340.	276.	0.0	1.2407	1.1201	1.5445	36.37	28.41	32.26
7	6.04.	0.	10.	9.	300.	11.	337.	337.	253.	0.0	1.2522	1.0749	1.5724	46.91	37.66	42.82
8	6.04.	9.	4.	4.	314.	11.	338.	338.	247.	0.0	1.2387	0.9770	1.6113	53.67	41.26	48.13
9	6.04.	14.	5.	5.	314.	11.	340.	340.	245.	0.0	1.2333	0.9523	1.6129	55.64	42.54	49.77
10	24.03.	21.	12.	10.	305.	11.	339.	339.	264.	0.0	1.4240	1.3368	1.5041	39.24	35.28	37.61
11	25.03.	9.	12.	12.	315.	11.	338.	338.	245.	0.0	1.4185	1.2417	1.6400	51.32	44.39	48.45

NR.	SELEKTIVITAETEN % VOM C1+ C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	38.24	19.04	14.12	21.87	17.70	27.28	41.52	82.17	81.45	62.82	8.70	9.92	17.56	0.99	77.13
2	45.05	17.72	14.49	23.47	21.86	22.29	38.18	84.53	82.63	65.34	8.07	9.28	16.43	0.93	79.07
3	37.80	13.53	11.81	18.34	17.48	38.91	58.95	86.16	82.92	69.17	6.32	7.43	15.97	1.11	83.42
4	38.61	14.77	12.08	19.93	18.36	34.97	53.80	84.97	82.69	68.44	6.67	7.59	16.43	0.88	82.76
5	37.79	14.28	12.79	19.53	17.48	36.62	52.08	86.24	83.78	68.11	7.17	8.50	15.31	0.91	81.30
6	40.40	14.24	12.72	20.99	19.56	32.49	51.79	83.38	83.39	67.74	7.29	8.41	15.71	0.91	81.24
7	39.68	14.91	12.61	21.24	19.23	32.01	44.63	85.21	82.95	61.63	10.12	11.20	16.21	0.83	74.29
8	41.60	17.49	14.01	24.23	21.17	23.10	37.20	80.77	79.45	55.03	11.45	12.97	19.67	0.87	69.26
9	42.92	18.19	13.79	22.83	23.24	21.96	36.46	80.55	83.94	52.58	15.58	15.78	16.82	1.24	62.64
10	32.95	14.26	10.87	17.37	16.22	41.29	45.31	83.34	83.55	60.45	10.89	12.21	15.53	0.92	72.36
11	32.04	17.30	11.74	18.71	15.52	36.73	36.04	80.23	82.30	54.93	13.39	14.00	18.78	0.92	66.71

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% C2/C4 OLEF.	CH4	C2H6	C2H4	C3H8	C3H6	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(STP) C2/4-O	C1+
1	36.95	20.99	5.65	8.53	17.31	3.94	13.89	3.28	26.42	15.32	46.99	37.69	24.0	65.0
2	43.52	19.56	6.75	7.78	19.33	3.71	17.45	3.80	21.64	15.50	44.41	40.09	27.3	62.7
3	36.80	15.07	6.78	5.06	15.91	2.60	14.11	3.01	37.38	18.42	43.23	38.35	15.3	49.8
4	37.50	16.49	6.31	5.81	16.45	3.05	14.74	3.20	34.04	16.83	43.05	39.32	19.1	50.9
5	38.73	15.87	6.12	6.04	16.38	2.74	14.23	2.86	35.76	16.67	44.58	38.75	24.2	66.0
6	39.25	15.93	6.40	6.39	17.00	3.55	15.95	3.27	31.72	16.30	43.32	40.37	25.5	64.9
7	38.50	16.55	5.46	7.26	17.56	3.19	15.48	3.30	31.21	14.18	45.61	40.21	33.1	86.0
8	41.13	19.39	5.33	9.10	18.89	4.71	16.23	4.35	22.42	12.52	47.04	40.44	38.5	95.9
9	41.32	21.26	4.84	9.05	17.74	4.49	18.81	3.73	21.28	11.70	42.85	45.45	41.1	99.2
10	32.02	15.35	4.79	6.19	14.17	2.95	11.27	2.69	40.30	14.95	43.93	41.13	24.2	75.6
11	30.96	19.12	4.09	7.79	14.53	3.73	12.34	2.75	35.67	13.21	44.92	39.87	30.0	96.8

Table 27 Results with the Mn-Fe catalyst 2 (Berlin)

1	Program FT 540
2	liquid phase reactor number 1
3	catalyst number 31
4	experiment number 96
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fractions
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 27 Ergebnisse mit dem Mn-Fe-Katalysator 2 (Berlin)

PROGRAMM FT 560 / FLUESSIGPHASE-REAKTOR-NR. 1 / 2 KATALYSATOR-NR. 31 / 3 VERSUCHS-NR. 96 / 4 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG / 24	BEGINN STD. 6 / 25	DAUER STD. 7	ANALYSEN-ZAHL 8	TEMP. GRD.C 9	DRUCK 10 BAR	H2+CO EINS. NL/LSH	FRISCH-GAS // NL/LSH	REST-GAS NL/LSH	KREISLAUF VERH. 12	CO/H2 FRISCH-GAS 13 / 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSAETZE % VON EINSATZ / 17 CO	H2	CO+H2
1	22.04.	0.	12.	10.	315.	11.	334.	334.	249.	0.0	0.9595	0.6353	1.2981	52.91	33.67	41.64
2	28.04.	1.	2.	2.	317.	21.	639.	639.	484.	0.0	0.2049	0.7445	1.2487	43.88	31.80	37.54
3	28.04.	8.	9.	9.	317.	21.	651.	651.	473.	0.0	0.8960	0.7471	1.1418	45.95	35.19	39.96
4	2.05.	18.	17.	15.	316.	36.	319.	319.	164.	0.0	0.7243	0.3995	0.9694	76.53	57.34	65.41
5	4.05.	19.	20.	19.	317.	36.	1135.	1135.	702.	0.0	0.9112	0.9339	0.8741	40.10	41.43	42.99
6	21.04.	10.	12.	12.	316.	11.	332.	332.	232.	0.0	1.2539	1.0454	1.9154	53.62	44.37	49.51
7	26.04.	23.	17.	14.	317.	21.	333.	333.	212.	0.0	1.2179	1.0001	1.4603	59.74	50.61	55.66
8	28.04.	17.	16.	16.	317.	21.	636.	636.	456.	0.0	1.2293	1.1848	1.4945	42.62	40.29	41.46
9	5.05.	11.	16.	14.	317.	36.	1135.	1135.	822.	0.0	1.3582	1.5092	1.0721	35.17	44.52	39.15
10	22.04.	12.	12.	10.	316.	11.	331.	331.	229.	0.0	1.5932	1.4210	1.6389	44.29	52.44	53.57
11	27.04.	15.	10.	10.	317.	21.	332.	333.	214.	0.0	1.4183	1.2812	1.5437	56.83	52.22	54.92
12	29.04.	9.	16.	16.	317.	21.	647.	647.	474.	0.0	1.4909	1.5497	1.4081	39.64	41.95	40.57
13	4.05.	7.	20.	19.	317.	36.	1134.	1134.	830.	0.0	1.5648	1.9009	1.1443	32.92	45.02	37.66
14	4.05.	10.	8.	9.	316.	36.	311.	311.	182.	0.0	2.0065	2.1731	1.9514	58.51	71.77	63.59

NR.	C2/C4 OLEF.	SELEKTIVITAETEN / 18 Z VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE / 19 DER FRAKTIONEN C2	C3	C4
1	43.35	17.42	14.46	20.46	21.39	26.27	41.93	81.45	82.37
2	35.02	16.42	13.99	19.19	16.05	34.36	42.54	81.37	83.87
3	30.44	14.34	12.31	16.70	15.94	40.71	40.34	79.28	76.76
4	16.93	12.55	13.90	14.29	6.63	55.64	23.23	68.57	69.43
5	12.50	16.97	17.11	15.00	10.03	45.99	22.11	66.72	73.95
6	40.71	12.61	12.11	10.93	20.09	36.21	55.17	84.80	87.13
7	30.97	8.53	8.80	14.69	15.41	51.57	59.13	86.20	93.55
8	29.14	10.26	13.05	14.76	13.77	48.19	54.36	84.26	91.74
9	23.06	12.37	17.06	14.05	10.42	53.37	38.61	77.70	79.09
10	38.15	14.34	12.73	19.59	18.35	36.48	46.45	84.05	86.94
11	24.65	7.87	9.27	13.99	12.88	56.01	61.76	87.21	83.36
12	33.32	9.59	9.64	14.62	14.67	51.49	58.56	86.00	82.43
13	23.85	11.62	9.64	14.37	10.99	53.69	40.59	79.10	83.29
14	18.43	5.30	6.67	10.39	7.62	70.02	48.77	84.27	84.86

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION / 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 Z V. C4H8
1	45.20	17.27	19.99	16.77	0.96	54.87
2	70.60	4.89	8.38	12.56	3.57	84.18
3	49.22	13.63	13.99	21.43	1.84	64.13
4	44.26	12.16	17.01	23.34	7.22	65.19
5	42.67	11.37	12.11	26.82	2.23	66.90
6	58.02	10.98	21.03	10.02	0.35	65.10
7	58.63	8.66	13.26	17.79	1.66	72.79
8	60.49	9.09	12.15	15.95	2.31	74.00
9	61.88	7.55	9.46	19.43	1.68	70.44
10	57.00	15.19	12.74	14.42	0.44	67.11
11	65.60	8.72	9.54	14.43	2.21	79.70
12	63.08	9.29	10.38	15.96	1.60	76.52
13	63.86	7.79	9.14	18.21	1.50	79.54
14	70.47	6.36	8.02	12.93	2.22	83.09

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES / 21 MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	33.96	19.23	5.85	8.69	15.09	3.84	17.02	3.77	25.50
2	33.99	18.17	5.76	8.34	15.12	3.62	13.02	2.59	33.40
3	29.51	15.90	4.91	7.63	12.84	3.51	11.86	3.72	39.72
4	16.41	12.91	2.65	8.69	9.49	4.56	4.46	2.04	54.39
5	12.78	18.63	2.58	9.73	9.35	5.34	2.85	2.91	44.61
6	39.71	14.06	6.54	5.65	15.70	2.95	17.47	2.71	35.42
7	30.76	9.57	5.68	4.21	12.41	2.08	12.17	3.05	50.84
8	28.49	11.49	5.34	4.81	12.19	2.38	11.70	2.55	50.70
9	22.43	13.46	3.78	6.45	10.65	3.20	8.70	2.22	57.26
10	37.03	16.43	5.74	7.10	14.16	3.30	15.13	2.78	33.61
11	20.14	8.84	5.67	3.73	11.98	1.84	10.54	2.18	55.27
12	29.69	10.73	5.53	4.19	12.31	2.13	11.95	2.62	50.67
13	23.05	12.95	3.81	5.99	10.95	3.10	8.60	2.19	52.62
14	18.22	5.97	3.21	3.61	8.63	1.69	6.39	1.18	69.33

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE / 22 % C2H4	% C3H6	% C4H8	AUSBEUTEN / 23 G/NM3(STP) C2/4-O	C1+
1	15.03	41.30	43.67	32.4	83.1
2	17.00	44.57	38.44	25.4	75.1
3	16.31	43.50	40.19	23.8	80.1
4	14.95	57.85	27.20	21.5	131.1
5	13.73	45.79	36.48	15.3	81.5
6	16.47	39.54	43.99	39.7	100.0
7	18.27	41.02	40.72	34.2	113.2
8	18.75	42.63	38.62	23.9	84.0
9	16.86	47.48	35.66	17.7	79.9
10	15.50	43.63	40.86	39.9	107.6
11	19.97	42.57	37.46	31.5	111.9
12	18.62	41.48	39.90	24.5	82.4
13	16.37	46.66	36.98	17.7	76.0
14	17.60	47.39	35.00	23.7	130.2

Table 28a Results with the Mn-Fe catalyst 3 (Berlin): part 1

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 36
4 experiment number 102
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversions, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 28a Ergebnisse mit dem Mn-Fe-Katalysator 3 (Berlin); Teil 1

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1 / KATALYSATOR-NR. 3 36 VERSUCHS-NR. 109 / SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LOH	FRISCH-GAS NL/LOH	REST-GAS NL/LOH	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSETZE R VON EINSATZ CO	H2	CO+H2
1	1.09. 7.	3.	3.		284.	11.	228.	283.	212.	0.0	0.8758	0.4468	1.4778	43.55	35.52	40.23
2	2.09. 1.	6.	3.		286.	11.	566.	629.	496.	0.0	0.7939	0.5988	1.3205	44.96	27.03	34.96
3	6.09. 12.	8.	6.		300.	11.	221.	268.	192.	0.0	0.7642	0.3718	1.3036	70.21	38.38	52.40
4	7.09. 4.	8.	6.		299.	11.	568.	819.	469.	0.0	0.7793	0.4070	1.1675	46.05	30.74	37.45
5	8.09. 13.	6.	3.		314.	11.	228.	280.	199.	0.0	0.9260	0.2903	1.4282	81.40	47.08	62.61
6	31.08. 19.	6.	2.		314.	11.	574.	822.	437.	0.0	1.3564	0.3961	1.2479	67.76	38.20	50.96
7	5.09. 12.	7.	6.		295.	11.	396.	434.	324.	0.0	1.1446	0.9304	1.4933	49.64	38.05	44.24
8	1.09. 19.	6.	3.		299.	11.	601.	682.	321.	0.0	1.1202	0.7597	1.5722	63.31	45.44	54.91
9	6.09. 4.	8.	6.		314.	11.	396.	644.	296.	0.0	1.1215	0.6549	1.5519	68.58	49.54	59.99
10	2.09. 7.	6.	3.		284.	11.	221.	277.	194.	0.0	1.5059	1.1042	1.6592	59.37	55.59	60.04
11	1.09. 13.	6.	3.		285.	11.	577.	634.	491.	0.0	1.5123	1.4361	1.6117	40.43	37.49	39.34
12	6.09. 20.	8.	6.		299.	11.	213.	258.	179.	0.0	1.5407	1.3148	1.7066	63.96	57.65	61.41
13	7.09. 14.	6.	6.		300.	11.	550.	587.	468.	0.0	1.4991	1.4311	1.6035	42.21	39.46	41.11
14	1.09. 1.	6.	3.		314.	11.	235.	291.	186.	0.0	1.4660	0.9720	1.7039	78.45	67.49	74.00
15	2.09. 20.	11.	7.		314.	11.	577.	631.	426.	0.0	1.5046	1.2940	1.6763	61.37	55.09	58.86

NR.	C2/C4 OLEF.	SELEKTIVITAETEN R VON CI+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	C4H8-2 TRANS	C4H8-2 CIS	N- C4H10	I- C4H10	OLEFIN-E R V. C4H8
1	28.34	10.03	10.21	13.96	11.34	54.49	62.19	86.28	85.00	76.67	3.49	4.93	13.47	1.45	90.12
2	29.69	10.15	9.89	13.96	12.11	53.93	65.83	86.22	93.82	70.49	2.26	3.34	14.15	2.03	93.56
3	29.25	12.22	11.64	15.60	12.22	48.32	51.39	84.00	83.18	69.30	6.37	7.51	15.20	1.62	83.32
4	25.72	10.18	9.48	13.07	10.78	56.49	59.10	85.01	83.59	72.50	4.79	6.30	14.72	1.69	86.73
5	28.62	13.79	12.20	16.02	11.70	46.32	44.89	83.28	83.93	69.23	8.75	9.95	14.51	1.56	77.72
6	24.26	13.46	11.35	14.93	11.30	48.96	51.08	84.87	84.82	72.47	5.55	6.85	13.69	1.44	85.39
7	25.24	8.26	9.07	12.46	10.51	59.69	70.61	87.35	88.14	79.33	2.34	3.43	13.45	1.43	93.15
8	27.33	9.46	9.69	13.45	10.99	56.37	62.48	87.76	86.67	74.02	3.65	4.99	12.13	1.29	90.03
9	28.18	11.08	10.63	14.34	11.36	52.91	54.07	87.01	86.31	74.89	5.13	6.33	12.42	1.27	88.72
10	24.65	10.53	9.65	13.85	10.14	57.76	51.44	86.95	85.85	79.37	4.45	6.02	13.26	0.90	87.43
11	25.92	10.39	9.20	13.78	10.95	57.09	61.12	87.78	86.04	78.54	3.04	4.44	12.91	0.99	91.29
12	27.39	13.92	13.12	14.71	11.10	50.33	48.48	85.54	84.79	69.07	7.15	8.57	14.20	1.01	81.46
13	26.61	14.12	10.35	14.24	10.79	50.80	52.31	85.94	84.53	73.67	4.58	6.28	14.14	1.33	87.15
14	25.09	13.22	10.92	14.02	10.17	52.46	44.25	85.14	85.67	84.64	9.87	11.16	13.41	0.91	35.43
15	27.27	14.01	9.94	14.38	11.32	53.35	51.36	86.41	85.44	70.62	6.71	8.13	13.59	0.96	82.64

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE R C2H4	R C3H6	R C4H8	AUSBEUTEN G/NM(ITG) C2/4-0	C1+
1	27.47	11.20	6.22	4.05	11.80	1.97	9.45	1.72	53.60	22.64	42.96	34.40	26.9	97.9
2	29.10	11.36	6.38	3.55	11.79	1.97	9.94	1.99	53.03	22.69	41.94	35.37	19.9	71.0
3	28.51	13.62	9.83	5.91	12.78	2.45	9.91	2.08	47.33	20.44	44.81	34.75	30.2	105.8
4	25.18	11.40	5.40	4.07	10.08	2.01	8.92	1.79	55.56	21.77	43.21	35.02	19.1	76.0
5	27.82	14.33	5.32	7.00	12.95	2.73	9.59	1.89	45.25	19.13	46.55	34.32	35.0	126.0
6	27.32	14.99	5.65	5.80	12.33	2.30	9.34	1.72	47.87	20.67	45.15	34.18	29.1	122.7
7	25.78	9.39	6.29	2.81	10.75	1.62	8.80	1.59	58.91	24.40	41.48	34.12	23.3	90.2
8	26.00	10.72	5.96	3.82	11.57	1.69	9.29	1.48	55.48	22.16	43.17	34.67	29.9	111.7
9	27.56	12.39	6.04	4.67	12.20	1.91	9.32	1.53	51.94	21.90	44.27	33.83	33.3	123.8
10	24.13	11.53	4.71	4.40	10.90	1.71	8.52	1.65	56.77	19.51	45.12	35.37	29.4	121.9
11	25.38	11.64	5.50	3.75	10.99	1.69	8.99	1.49	56.13	21.69	43.10	35.01	20.3	79.9
12	24.37	15.36	4.78	5.44	12.27	2.17	9.33	1.73	49.22	18.11	46.51	35.18	32.7	123.8
13	25.40	15.72	5.11	5.00	11.90	2.04	8.98	1.68	49.66	19.75	45.97	34.28	21.4	82.8
14	24.46	14.73	4.32	5.83	11.63	2.13	8.49	1.47	51.40	17.69	47.59	34.74	36.5	149.3
15	26.54	15.40	5.03	4.98	12.10	1.99	9.42	1.66	49.22	19.94	45.59	35.47	31.5	118.7

Table 28b Results with the Mn-Fe catalyst 3 (Berlin); part 2

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 36
4 experiment number 109
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

b. 28b Ergebnisse mit dem Mn-Fe-Katalysator 3 (Berlin); Teil 2

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 36 3 VERSUCHS-NR. 109 4 SUSPENSIONS-VOL. 5 3.000 L

NR.	BEGINN 6 TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL 7 8	TEMP. 9 GRD.C	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH-GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREIS-LAUF 13 VERH.	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSAETZE % VOM EINSATZ CO 17	GAS-UMSAETZE % VOM EINSATZ H2	GAS-UMSAETZE % VOM EINSATZ CO+H2
1	8.09.	20.	5.	5.	295.	21.	551.	620.	536.	0.0	0.8247	0.7522	1.1429	25.74	18.57	21.81
2	8.09.	6.	6.	6.	284.	21.	374.	432.	358.	0.0	1.1929	1.1067	1.4333	31.71	26.39	29.29
3	9.09.	3.	8.	6.	295.	21.	576.	646.	545.	0.0	1.4856	1.5671	1.2666	23.11	27.11	24.72
4	9.09.	13.	6.	2.	300.	11.	408.	459.	378.	0.0	1.1720	1.1104	1.3319	31.61	27.82	29.87

NR.	SELEKTIVITAETEN % VON C1+ 18: C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19: C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20: C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	27.40	12.13	11.19	15.09	12.27	49.32	47.77	81.26	79.93	70.20	4.16	5.47	18.19	1.98	87.94
2	27.45	6.99	8.94	12.81	11.23	60.04	75.91	87.03	84.80	80.06	1.81	2.93	13.44	1.77	94.42
3	22.92	6.60	7.62	11.14	9.94	64.71	66.01	86.17	83.54	75.25	3.30	4.99	14.94	1.62	90.08
4	27.05	13.55	11.76	15.63	11.05	48.02	42.71	82.17	83.13	69.27	6.67	8.19	15.45	1.43	82.13

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES 21 MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	26.68	13.52	5.20	6.10	11.94	2.89	9.54	2.50	48.32	19.50	44.74	35.75	11.7	44.0
2	27.03	7.87	6.68	2.27	10.98	1.71	9.37	1.74	59.37	24.72	40.60	34.68	16.2	59.9
3	22.57	7.44	4.95	2.73	9.45	1.59	8.17	1.67	64.00	21.93	41.86	36.21	11.4	50.5
4	26.29	15.06	4.88	7.02	12.48	2.84	8.93	1.88	46.91	18.56	47.47	33.97	15.8	60.1

Table 29 Results with the Mn-Fe catalyst 4 (Berlin)

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 37
4	experiment number 113
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	$H_2 + CO$ charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 29 Ergebnisse mit dem Mn-Fe-Katalysator 4 (Berlin)

PROGRAMM FT.540 / FLUESSIGPHASE-REAKTOR-NR. 1 / KATALYSATOR-NR. 37 / VERSUCHS-NR. 113 / SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LGH	FRISCH-GAS NL/LGH	REST-GAS NL/LGH	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	29.09.	18.	3.	3.	275.	21.	350.	412.	324.	0.0	1.1277	1.1540	1.0645	27.76	29.41	28.54
2	30.09.	0.	6.	6.	285.	21.	358.	411.	316.	0.0	1.1064	1.0685	1.1747	37.91	35.70	36.86
3	3.10.	15.	10.	9.	294.	21.	357.	403.	288.	0.0	1.1446	1.0736	1.2376	44.80	43.29	45.16
4	4.10.	2.	9.	6.	305.	21.	353.	400.	272.	0.0	1.1279	0.9488	1.3731	56.14	47.86	52.25
5	4.10.	11.	8.	6.	314.	21.	359.	403.	260.	0.0	1.1396	0.8439	1.3969	64.19	52.03	58.48
6	5.10.	3.	8.	6.	326.	21.	358.	404.	251.	0.0	1.1181	0.7537	1.4023	70.48	56.21	63.74
7	6.10.	19.	8.	6.	334.	21.	353.	399.	239.	0.0	1.1277	0.6056	1.4806	79.06	59.44	69.31
8	6.10.	4.	8.	5.	314.	21.	355.	403.	274.	0.0	0.7876	0.5156	1.1449	62.27	42.92	51.39
9	9.10.	19.	8.	6.	314.	21.	354.	401.	267.	0.0	0.9517	0.6809	1.2524	62.29	47.30	54.68
10	10.10.	18.	19.	14.	315.	21.	361.	400.	272.	0.0	1.1048	0.9395	1.2943	59.15	47.17	51.38
11	6.10.	11.	8.	6.	314.	21.	345.	391.	249.	0.0	1.1769	1.2552	1.4275	58.75	54.15	57.07
12	6.10.	19.	8.	4.	314.	21.	349.	396.	264.	0.0	1.5312	1.5799	1.5322	56.79	56.75	56.77
13	7.10.	3.	8.	6.	314.	21.	348.	395.	266.	0.0	1.7162	1.8630	1.6146	55.62	59.11	58.33
14	7.10.	11.	8.	6.	314.	21.	161.	206.	140.	0.0	1.0495	0.6340	1.4034	71.26	52.93	62.23
15	7.10.	19.	8.	4.	314.	21.	118.	153.	102.	0.0	1.0804	1.5386	1.7591	69.88	66.99	68.83

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	AUSBEUTEN-1 % V. C4H8
1	24.89	7.43	8.86	12.32	9.15	62.24	76.25	85.43	81.26	91.07	1.39	1.19	14.69	2.05	97.38
2	24.43	6.96	9.17	13.55	8.82	61.50	74.20	84.00	83.36	82.10	1.26	0.0	14.35	2.29	98.49
3	25.37	6.93	8.74	12.39	9.55	62.19	75.39	85.66	83.93	82.19	1.74	0.0	14.04	2.03	97.93
4	25.36	7.40	8.90	12.53	9.65	61.53	73.58	85.79	83.56	81.35	2.21	0.0	14.48	1.96	97.35
5	24.78	7.82	8.77	12.29	9.53	61.59	71.06	86.05	83.64	81.44	2.20	0.0	14.49	1.87	97.37
6	24.16	8.44	8.84	12.20	9.38	61.14	66.02	85.63	83.94	80.71	1.93	1.30	14.27	1.78	96.15
7	24.46	9.59	9.41	12.37	9.17	59.97	61.85	85.11	83.05	81.18	2.68	0.0	14.17	1.98	96.81
8	25.96	11.90	10.39	13.79	10.91	53.03	58.11	82.87	80.90	76.63	2.37	1.50	16.84	2.27	94.72
9	25.65	9.55	9.50	13.09	10.17	57.73	64.16	84.31	82.23	79.36	2.36	0.49	15.95	1.85	96.54
10	25.00	9.48	9.10	12.72	10.03	59.40	62.81	84.05	83.45	79.07	1.84	2.54	14.73	1.82	94.76
11	23.84	6.95	8.16	11.51	9.24	64.14	72.77	87.14	85.24	83.50	1.75	0.0	12.92	1.84	97.95
12	23.66	6.56	8.00	11.32	9.07	65.05	74.12	87.83	85.89	83.94	1.96	0.0	12.65	1.47	97.74
13	23.83	6.40	8.02	11.22	8.86	65.50	75.70	88.99	86.16	84.85	1.73	2.08	10.50	1.34	96.29
14	25.74	10.76	9.92	13.16	10.00	56.66	58.47	84.18	81.58	77.45	2.42	3.71	14.46	1.95	92.67
15	24.88	8.23	9.20	12.48	9.21	61.08	63.81	87.85	87.36	80.52	2.80	4.05	11.29	1.34	92.16

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	24.48	8.36	6.64	2.72	10.35	1.85	7.49	1.56	61.53	27.13	42.77	30.60	14.3	58.3
2	25.13	7.84	6.70	2.50	11.20	2.24	7.23	1.50	60.81	26.65	44.57	28.78	19.9	79.3
3	24.97	7.81	6.84	2.32	10.45	1.83	7.99	1.56	61.50	26.57	41.84	31.59	23.1	92.3
4	24.94	8.32	6.44	2.48	10.57	1.83	7.93	1.67	60.80	25.82	42.38	31.80	26.6	104.7
5	24.35	8.79	6.13	2.67	10.39	1.77	7.84	1.59	60.83	25.15	42.67	32.18	29.1	119.3
6	23.72	9.48	5.73	3.16	10.26	1.83	7.73	1.53	60.31	24.37	43.25	32.58	30.8	129.9
7	23.97	10.74	5.70	3.77	10.73	1.97	7.53	1.50	58.05	23.78	44.70	31.44	33.8	140.8
8	25.34	12.83	5.89	4.55	11.15	2.92	8.30	2.03	52.83	23.24	44.02	32.74	26.3	133.9
9	24.96	13.70	5.97	3.57	10.80	2.11	8.19	1.84	56.82	23.91	43.20	32.81	27.7	110.9
10	24.50	10.62	5.72	3.63	10.57	1.98	9.20	1.69	57.59	23.36	43.16	33.48	25.8	104.4
11	23.48	7.82	5.95	2.35	9.88	1.43	7.75	1.19	63.43	24.91	42.07	33.02	27.4	116.7
12	23.32	7.39	5.94	2.19	9.80	1.42	7.68	1.31	64.37	25.06	42.02	32.92	27.1	116.2
13	23.51	7.23	5.96	2.10	9.85	1.28	7.70	1.37	64.82	25.34	41.89	32.77	27.4	116.6
14	24.69	11.48	5.63	4.32	10.84	2.13	8.18	1.66	55.70	23.55	43.09	33.37	31.2	126.2
15	24.48	9.03	5.77	3.51	10.78	1.96	7.91	1.19	60.75	23.59	44.06	32.35	34.3	140.1

Table 30 Results with the Mn-Fe catalyst 5 (Berlin) in the liquid phase reactor

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 1
4 experiment number 119
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a H_2 + CO charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 30 Ergebnisse mit dem Mn-Fe-Katalysator 5 (Berlin) im Flüssigphasereaktor

PROGRAMM FT 540 FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 1 VERSUCHS-NR. 119 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	10.11.	19.	18.	14.	319.	10.	419.	467.	406.	0.0	1.2642	1.3178	1.0793	19.17	22.45	20.62
2	11.11.	11.	7.	5.	320.	10.	415.	463.	387.	0.0	1.2627	1.3176	1.1229	25.05	22.16	26.42
3	11.11.	18.	10.	8.	320.	10.	199.	211.	160.	0.0	1.2054	1.3292	1.2140	35.92	38.03	36.85
4	14.11.	15.	11.	9.	320.	10.	193.	234.	187.	0.0	0.7967	0.6199	0.9092	39.59	29.09	33.55
5	15.11.	2.	12.	11.	320.	10.	198.	239.	182.	0.0	0.9240	0.8835	1.0049	36.33	33.41	34.81
6	15.11.	16.	13.	10.	320.	10.	203.	243.	194.	0.0	1.0695	1.0672	1.0709	34.63	34.55	34.59
7	18.11.	20.	10.	7.	320.	10.	197.	234.	186.	0.0	1.2272	1.3016	1.1002	33.09	36.91	34.81
8	21.11.	14.	12.	9.	320.	10.	199.	226.	183.	0.0	1.5483	1.7199	1.2933	31.51	38.01	34.06
9	22.11.	1.	12.	10.	319.	10.	190.	226.	196.	0.0	1.7353	1.8473	1.4471	23.34	27.99	25.04

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	33.45	14.06	12.29	15.66	11.40	46.59	62.71	100.00	88.48	76.20	5.54	6.66	10.47	1.05	86.21
2	32.04	13.60	11.75	15.03	10.95	46.67	62.25	100.00	89.50	76.15	5.59	6.76	10.54	0.96	86.04
3	27.35	10.64	9.85	12.71	9.20	57.61	65.10	100.00	89.52	77.89	5.23	6.40	9.26	1.22	87.01
4	29.54	20.83	16.13	17.08	10.80	35.16	49.93	81.50	83.54	57.67	12.69	13.18	15.08	1.38	69.03
5	29.97	16.33	14.27	16.10	10.14	43.17	50.99	85.88	87.46	66.45	9.79	11.22	11.30	1.24	75.98
6	29.56	15.04	13.63	15.51	9.67	46.15	55.90	87.06	88.55	69.13	8.99	10.43	10.23	1.22	78.07
7	29.10	14.00	12.74	14.76	9.32	49.18	60.97	88.49	88.91	73.71	6.91	8.29	9.43	1.66	82.90
8	29.72	13.25	12.54	14.95	9.53	49.73	62.72	88.97	89.69	73.71	7.23	8.75	8.99	1.32	82.18
9	28.85	15.12	13.20	15.44	9.34	46.91	55.00	86.45	88.22	64.60	11.31	12.31	10.60	1.17	73.22

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	32.62	15.69	7.51	4.79	15.27	0.00	9.83	1.33	45.58	23.04	46.82	30.14	13.6	41.6
2	31.26	15.18	7.14	4.64	14.67	0.00	9.46	1.27	47.65	22.83	46.91	30.26	16.7	53.4
3	25.82	11.93	6.29	3.61	12.46	0.00	8.07	0.98	56.65	23.44	46.45	30.10	20.1	74.9
4	28.39	22.89	6.74	9.81	13.39	3.18	8.67	1.77	33.95	27.34	47.11	30.55	18.9	66.6
5	29.05	17.10	7.05	7.57	13.40	2.31	8.59	1.28	41.99	24.28	46.13	29.59	20.3	69.8
6	28.73	16.72	7.29	6.39	13.12	2.04	8.32	1.12	45.00	25.17	45.67	28.97	20.0	69.6
7	28.35	15.60	7.55	5.20	12.73	1.73	8.07	1.04	48.07	26.64	44.39	28.47	19.9	70.2
8	28.99	14.78	7.67	4.39	12.78	1.69	8.34	0.99	48.66	26.47	44.76	29.77	20.0	68.8
9	28.03	16.89	7.05	6.19	12.97	2.13	8.01	1.11	45.74	25.16	46.26	28.58	14.1	50.4

Table 31 Results with the Mn-Fe catalyst 5 (Berlin) in the fixed-bed reactor

1	program FT 540
2	fixed-bed reactor number 5
3	catalyst number 1
4	experiment number 2
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yields
24	date
25	hour
26	degrees C

Tab. 31 Ergebnisse mit dem Mn-Fe-Katalysator 5 (Berlin) im Festbettreaktor

PROGRAMM FT 540 / FESTBETT-REAKTOR-NR. 5. KATALYSATOR-NR. 1 VERSUCHS-NR. 2 KATALYSATOR-VOL. 0.050 L

NR.	BEGINN TAG.MON.	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LKH	FRISCH-GAS NL/LKH	REST-GAS NL/LKH	KREISLAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	21.04.	19.	21.	7.	262.	11.	242.	269.	183.	0.0	1.2397	1.0944	1.3564	53.96	47.67	51.21
2	22.30.	11.	12.	4.	267.	11.	236.	262.	162.	0.0	1.2269	0.6479	1.4235	69.65	56.09	63.56
3	22.00.	21.	12.	6.	276.	11.	238.	265.	154.	0.0	1.2311	0.6587	1.5509	79.37	65.98	72.92
4	23.30.	9.	12.	6.	280.	11.	238.	267.	146.	0.0	1.2274	0.4893	1.4399	85.95	64.69	76.40
5	23.08.	21.	12.	6.	285.	11.	234.	263.	140.	0.0	1.2333	0.3531	1.6285	91.34	68.77	81.06
6	24.03.	9.	12.	11.	290.	11.	230.	256.	113.	0.0	1.2291	0.2669	1.5763	94.29	73.20	84.79
7	24.30.	0.	13.	9.	290.	11.	238.	264.	161.	0.0	1.2372	0.8288	1.5259	72.74	50.59	67.15
8	27.09.	11.	13.	6.	290.	11.	265.	294.	172.	0.0	1.2354	0.6900	1.5702	77.75	61.96	71.74
9	28.38.	13.	9.	3.	295.	11.	248.	276.	156.	0.0	1.2326	0.6407	1.5783	81.19	63.81	73.40
10	28.04.	22.	12.	4.	303.	11.	249.	277.	152.	0.0	1.2360	0.5220	1.5553	85.91	66.60	77.28
11	29.04.	10.	12.	4.	305.	11.	252.	280.	150.	0.0	1.2131	0.4135	1.5934	89.76	64.46	80.67
12	29.39.	22.	12.	4.	310.	11.	193.	214.	112.	0.0	1.2339	0.3257	1.5810	92.58	72.21	83.46
13	30.04.	11.	24.	4.	315.	11.	252.	280.	141.	0.0	1.2326	0.2345	1.5337	95.56	76.67	87.09
14	31.24.	11.	24.	6.	316.	11.	370.	411.	215.	0.0	1.2340	0.3486	1.5654	92.33	72.83	83.61
15	1.39.	11.	15.	2.	316.	11.	472.	524.	297.	0.0	1.2461	0.5969	1.5746	84.34	66.75	76.51

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	22.93	6.60	7.14	9.94	9.59	66.73	77.58	87.10	91.11	74.86	8.13	8.13	7.24	1.65	82.16
2	22.96	6.02	7.59	10.50	9.15	65.95	75.06	87.90	87.85	80.75	3.55	3.55	10.62	1.53	91.92
3	23.28	7.15	7.93	10.90	9.16	64.85	71.52	88.09	87.35	81.94	2.68	2.69	11.13	1.53	93.85
4	23.82	7.61	8.41	11.26	9.55	63.17	66.41	87.74	87.55	80.77	3.39	3.39	10.99	1.56	92.25
5	25.04	9.72	9.49	12.72	9.97	58.10	55.44	86.86	87.50	76.53	5.49	5.49	11.10	1.40	87.46
6	25.42	11.70	10.45	14.18	10.68	53.30	41.00	84.10	86.21	65.51	10.35	10.35	12.60	1.20	75.99
7	24.64	9.95	8.46	11.67	9.76	61.14	69.85	87.74	86.93	80.02	3.06	3.06	11.60	1.47	92.97
8	25.06	9.21	8.69	12.04	10.01	60.06	67.20	87.76	87.37	79.57	3.90	3.90	11.21	1.43	91.78
9	23.94	9.00	8.46	11.53	9.50	61.50	65.66	87.77	87.21	79.87	3.67	3.67	11.29	1.59	91.59
10	24.63	9.26	8.74	12.13	9.93	59.93	61.80	87.35	87.29	78.41	4.44	4.44	11.25	1.46	89.82
11	24.58	9.69	8.94	12.43	10.04	58.91	56.39	86.73	87.29	76.06	5.61	5.61	11.39	1.32	87.14
12	24.61	10.27	9.27	12.86	10.17	57.49	51.01	86.03	87.12	77.64	7.24	7.24	11.69	1.19	83.37
13	25.14	12.21	10.10	14.16	10.74	52.79	40.15	83.61	86.12	61.91	12.11	12.11	12.77	1.11	71.88
14	25.02	11.25	9.65	13.66	10.62	54.82	43.94	84.70	86.66	67.33	9.66	9.66	12.20	1.14	77.79
15	25.60	11.91	10.15	14.32	10.82	53.13	42.54	85.00	86.57	67.62	9.48	9.48	12.29	1.14	78.11

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	22.63	7.45	5.47	1.69	8.54	1.33	8.62	0.87	66.03	24.16	37.75	38.09	23.8	105.0
2	22.63	7.19	5.61	2.00	9.09	1.31	7.93	1.14	65.23	24.80	40.16	35.02	29.5	130.1
3	22.93	8.36	5.59	2.38	9.46	1.34	7.80	1.10	64.11	24.37	41.25	34.38	33.3	145.1
4	23.44	8.57	5.49	2.98	9.72	1.42	8.23	1.21	62.38	23.43	41.45	35.11	36.6	156.1
5	24.44	10.90	5.15	4.44	10.83	1.72	8.55	1.27	57.14	21.01	44.14	34.85	40.4	154.8
6	24.80	13.05	4.18	6.45	11.63	2.30	8.99	1.49	51.01	16.85	46.92	36.23	42.5	171.4
7	24.20	10.06	5.01	2.69	10.06	1.47	8.33	1.30	63.28	23.99	41.57	34.44	32.6	134.8
8	24.63	10.34	5.65	3.09	10.37	1.47	8.50	1.29	59.27	22.95	42.15	34.90	35.7	145.1
9	23.51	10.11	5.65	3.36	9.92	1.47	8.14	1.24	60.61	23.20	42.18	34.62	35.2	145.6
10	24.17	10.39	5.30	3.51	10.37	1.57	8.51	1.28	59.07	21.90	42.91	35.19	38.0	157.3
11	24.39	10.97	4.95	4.13	10.57	1.69	8.59	1.33	57.75	20.30	43.86	35.84	39.5	164.0
12	24.10	11.49	4.61	4.75	10.91	1.84	8.68	1.33	56.49	19.12	44.47	36.00	40.8	169.4
13	24.52	13.61	3.96	6.32	11.54	2.37	9.02	1.51	51.68	16.13	47.08	36.79	43.1	175.9
14	24.45	12.57	4.14	5.67	11.32	2.13	8.99	1.43	53.75	16.95	46.29	36.76	41.4	169.2
15	24.98	13.29	4.21	6.10	11.63	2.15	9.14	1.47	52.01	16.87	46.55	36.58	38.4	154.7

Table 32 Results with the Mn-Fe catalyst 6 (berlin) in the liquid phase reactor; first experiment

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 3
4	experiment number 123
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversions, percent of charge
18	selectivities
19	olefin content of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 52 Ergebnisse mit dem Mn-Fe-Katalysator 6 (Berlin) im Flüssigphasereaktor; 1. Versuch

PROGRAMM FT 540 (1) FLUESSIGPHASE-REAKTOR-NR. 1 (2) KATALYSATOR-NR. 3 (3) VERSUCHS-NR. 123 (4) SUSPENSIONS-VOL. 3.000 L (5)

NR.	BEGINN TAG (6a)	BEGINN STD. (6b)	DAUER STD. (7)	ANALYS. ZAHL (8)	TEMP. GRD.C (9)	DRUCK BAR (10)	H2+CO EINS. NL/L*H (10a)	FRISCH-GAS NL/L*H (11)	REST-GAS NL/L*H (12)	KREIS-LAUF VERH. (13)	CO/H2 FRISCH-GAS (14)	CO/H2 REST-GAS (15)	CO/H2 UMSATZ-VERH. (16)	GAS-UMSAETZE % VOM EINSATZ CO (17)	H2	CO+H2
1	10.01.	4.	8.	6.	281.	11.	302.	310.	282.	0.0	1.0872	1.1067	0.9970	16.29	17.72	16.96
2	10.01.	12.	4.	2.	291.	11.	315.	340.	278.	0.0	1.0807	1.1239	0.9484	24.88	27.77	26.27
3	12.01.	11.	4.	2.	291.	11.	298.	315.	237.	0.0	1.0890	1.0673	1.2165	15.49	13.05	14.73
4	12.01.	14.	4.	4.	301.	11.	291.	309.	270.	0.0	1.0862	1.0498	1.2021	18.26	15.35	16.97
5	12.01.	18.	15.	15.	310.	11.	331.	317.	271.	0.0	1.0914	1.0701	1.1610	24.91	23.42	24.20
6	13.01.	9.	9.	7.	320.	11.	314.	321.	268.	0.0	1.0946	1.0591	1.1893	29.61	27.25	28.48
7	13.01.	19.	7.	5.	329.	11.	83.	103.	77.	0.0	1.1149	0.9938	1.2577	52.54	46.78	49.81
8	16.01.	16.	21.	16.	310.	11.	98.	108.	93.	0.0	1.1350	1.0391	1.2958	50.38	44.13	47.45
9	17.01.	10.	9.	8.	320.	11.	93.	102.	78.	0.0	1.2357	1.0347	1.3343	53.64	48.47	51.29
10	17.01.	21.	15.	12.	329.	11.	86.	106.	90.	0.0	1.7111	1.9513	1.5109	49.15	54.54	52.51
11	18.01.	12.	9.	5.	319.	11.	101.	124.	98.	0.0	1.7622	2.1939	1.5285	55.81	64.34	59.90

NR.	SELEKTIVITAETEN % VON C1+ (18) C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN (19) C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION (20) C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	29.56	14.06	11.74	16.42	12.61	45.17	49.61	81.93	81.60	62.39	9.03	10.17	17.19	1.21	76.46
2	22.78	11.39	10.33	14.14	10.16	54.28	42.74	79.30	81.55	54.49	13.32	13.75	17.44	1.01	66.80
3	27.40	23.81	14.10	18.98	12.63	30.48	29.18	71.65	76.61	46.73	15.30	14.65	22.22	1.09	60.94
4	26.62	26.05	15.85	20.59	13.37	24.13	21.16	64.01	75.43	38.33	19.88	17.21	23.50	1.07	59.02
5	22.19	25.95	16.15	19.20	11.48	27.22	17.01	57.20	73.75	33.18	22.33	18.23	24.90	1.35	45.00
6	22.24	23.99	17.92	19.80	11.20	27.09	14.34	55.68	71.61	31.82	23.17	18.61	24.93	1.46	41.24
7	18.39	30.67	19.62	19.58	10.94	20.19	11.15	43.84	67.91	25.61	24.10	18.19	30.10	2.00	37.72
8	15.25	26.97	19.58	19.80	11.05	23.59	8.72	35.21	63.22	20.91	22.82	16.50	37.36	2.41	34.71
9	16.08	28.76	19.25	19.91	10.73	21.35	9.22	37.80	63.15	22.04	23.76	17.35	34.52	2.33	34.93
10	23.62	19.47	14.22	19.31	13.10	35.91	17.70	60.31	77.55	28.75	27.56	21.27	21.21	1.24	37.06
11	21.87	16.64	12.72	18.78	12.78	39.08	14.36	55.54	75.21	27.14	27.24	20.82	23.42	1.37	36.39

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES (21) MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG (22) DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN (23) G/NM3(IG) C2/C4-O	C1+
1	28.73	15.63	5.66	6.16	13.08	3.02	9.99	2.33	44.12	19.70	45.51	34.79	9.8	34.1
2	23.19	12.71	4.18	6.00	10.93	2.99	8.08	1.80	53.21	18.02	47.15	34.83	12.3	53.1
3	26.16	26.01	3.93	10.22	12.99	5.89	9.25	2.91	29.30	15.02	49.69	35.29	7.6	23.0
4	25.28	28.33	3.19	12.72	12.52	7.38	9.58	3.23	23.08	12.60	49.51	37.89	8.3	33.0
5	21.36	28.16	2.61	13.69	10.42	8.17	8.03	2.96	26.02	12.38	49.47	38.15	10.0	47.3
6	21.00	31.30	2.76	15.17	10.45	8.72	7.79	2.89	20.93	13.16	49.79	37.05	11.6	55.3
7	17.30	32.96	1.95	16.44	9.06	10.82	6.98	2.42	19.14	11.47	47.45	41.07	16.4	96.2
8	14.37	29.07	1.53	17.13	6.57	12.47	6.27	4.29	22.48	10.63	45.72	43.65	13.2	92.0
9	15.12	30.93	1.67	17.61	7.06	12.20	6.37	3.85	20.28	11.03	46.80	42.16	15.0	99.2
10	22.67	20.29	2.42	12.04	11.18	7.71	9.09	2.72	34.59	10.66	49.30	40.04	22.7	100.1
11	21.03	18.31	1.76	11.23	10.03	6.42	9.24	3.16	37.85	6.35	47.71	45.94	24.6	117.0

Table 33 Results with the Fe-Mn catalyst 6 (Berlin) in the liquid phase reactor; second experiment

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 3
4	experiment number 125
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin content of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 33 Ergebnisse mit dem Mn-Fe-Katalysator 6 (Berlin) im Flüssigphasereaktor; 2. Versuch

PROGRAMM FT 940 FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 3 VERSUCHS-NR. 179 SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG.STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO-EINS. NL/LPH	FRISCH-GAS NL/LPH	REST-GAS NL/LPH	KREIS-LAUF-VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	13.02. 21.	16.	11.	270.	11.	81.	92.	64.	0.0	1.2939	1.1261	1.3962	45.94	40.45	43.57
2	14.02. 11.	23.	20.	280.	11.	81.	93.	64.	0.0	1.2675	1.0714	1.4457	57.56	49.79	54.13
3	15.02. 10.	10.	9.	280.	11.	210.	223.	166.	0.0	1.0652	1.0447	1.1122	39.29	36.41	37.58
4	15.02. 23.	14.	12.	290.	11.	213.	227.	160.	0.0	1.0377	0.9082	1.2167	45.23	41.99	43.62
5	16.02. 11.	24.	22.	280.	11.	211.	224.	169.	0.0	1.0601	1.0377	1.1014	37.06	35.67	36.39
6	17.02. 11.	10.	8.	290.	11.	213.	224.	159.	0.0	1.0651	0.9374	1.2341	49.17	42.36	45.87
7	17.02. 20.	8.	7.	290.	11.	210.	224.	160.	0.0	1.3602	1.1747	1.5439	44.47	45.01	44.73
8	20.02. 15.	21.	18.	290.	11.	222.	237.	171.	0.0	1.3590	1.4064	1.3014	42.49	44.39	43.29
9	21.02. 11.	11.	9.	300.	11.	219.	236.	161.	0.0	1.4063	1.3968	1.4151	52.27	51.95	52.14
10	21.02. 22.	13.	11.	310.	11.	217.	232.	155.	0.0	1.4059	1.3429	1.4527	55.29	57.37	56.40
11	22.02. 1.	12.	8.	310.	11.	223.	237.	162.	0.0	1.3494	1.1952	1.4609	55.49	55.30	55.45
12	23.02. 12.	11.	8.	320.	11.	224.	238.	163.	0.0	1.3712	1.3594	1.3933	57.05	56.66	56.98
13	23.02. 20.	13.	6.	320.	11.	223.	237.	160.	0.0	1.3903	1.4049	1.3775	52.66	53.56	53.07
14	24.02. 2.	13.	7.	320.	11.	225.	239.	186.	0.0	1.3947	1.4452	1.3234	39.15	41.45	43.22
15	24.02. 9.	7.	7.	320.	11.	226.	243.	197.	0.0	1.3679	1.4379	1.2339	30.69	34.01	32.09

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	26.37	8.54	9.89	13.43	10.94	57.23	56.14	85.91	86.76	74.61	4.31	5.04	13.45	1.59	88.32
2	25.39	9.57	10.04	14.84	11.42	54.13	38.22	81.60	82.94	63.08	9.00	10.06	15.59	1.29	76.05
3	25.10	9.58	9.74	13.27	13.86	56.56	50.29	84.06	83.30	70.66	5.53	7.15	14.96	1.76	85.36
4	25.51	11.31	10.58	14.79	11.35	51.97	39.90	80.82	82.17	63.63	8.31	10.23	16.47	1.36	77.43
5	25.74	10.67	10.13	14.17	11.59	53.54	45.33	82.54	82.15	67.89	6.17	9.09	16.46	1.41	82.64
6	25.13	11.96	10.79	15.45	11.76	50.06	36.50	79.39	81.16	61.29	5.06	10.87	17.41	1.76	79.45
7	26.19	9.71	9.75	14.45	11.50	54.59	45.68	81.33	84.05	68.31	6.09	8.85	16.00	1.15	81.77
8	25.46	11.48	10.46	15.74	12.10	50.22	35.75	78.28	81.85	55.91	13.55	14.95	17.26	1.09	65.46
9	25.43	14.14	11.56	17.29	12.38	44.71	27.03	72.14	79.65	45.60	17.64	16.40	19.22	1.14	57.25
10	24.84	19.92	13.29	18.27	12.09	37.49	21.65	68.76	78.15	41.23	19.19	17.42	20.71	1.15	53.27
11	24.87	22.09	14.17	18.99	12.24	32.51	19.81	66.64	76.82	40.23	19.99	17.19	22.01	1.18	53.02
12	24.22	27.23	14.62	19.39	11.36	26.49	18.23	65.62	76.14	40.38	18.62	17.14	22.62	1.24	53.03
13	24.06	28.40	16.02	19.55	11.38	24.26	17.66	64.56	75.74	39.79	18.74	17.27	23.13	1.23	52.40
14	24.04	31.43	16.92	19.26	11.22	21.19	18.85	64.49	75.24	39.99	18.43	16.85	23.41	1.35	53.19
15	22.74	32.94	17.47	10.11	9.70	21.77	20.37	64.86	76.54	41.77	19.35	16.41	21.97	1.49	54.57

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IDEAL) C2/4-O	C1+
1	25.87	9.58	5.45	4.56	11.32	1.95	9.10	1.69	56.35	21.05	43.77	35.18	22.9	88.7
2	24.82	13.70	3.75	6.50	11.41	2.43	9.76	1.97	53.15	15.11	47.59	37.30	27.2	109.7
3	24.57	10.72	4.79	5.09	10.92	2.17	8.84	1.86	55.63	15.91	44.45	38.04	19.7	76.3
4	24.87	12.02	4.12	6.63	11.66	2.90	9.30	2.36	50.93	16.58	46.07	36.56	22.9	92.3
5	25.14	11.88	4.49	5.09	11.43	2.53	9.22	2.08	52.58	17.85	45.46	36.69	18.5	75.6
6	25.35	13.32	3.03	7.15	11.92	3.24	9.29	2.23	49.90	15.31	47.60	37.09	23.2	92.5
7	25.62	10.86	4.36	5.55	11.91	2.44	9.46	1.96	53.66	17.01	46.09	36.90	23.2	93.7
8	25.30	12.79	3.64	7.02	12.09	3.49	9.65	2.27	49.18	14.39	47.46	38.15	22.1	87.4
9	24.60	15.67	3.05	8.76	12.02	4.97	9.55	2.54	43.57	12.31	48.07	38.87	25.7	104.5
10	23.90	20.79	2.76	10.69	12.37	5.75	9.38	2.63	37.24	11.53	50.50	37.97	27.7	116.2
11	23.78	24.15	2.68	11.64	12.10	6.34	9.09	2.81	31.29	11.78	50.91	37.81	26.6	109.5
12	22.98	29.53	2.70	12.99	12.07	6.63	8.21	2.66	25.21	11.76	52.52	35.72	25.5	111.1
13	22.77	31.16	2.68	13.38	11.94	6.87	8.15	2.71	23.12	11.75	52.64	35.60	23.5	103.4
14	22.66	33.88	3.01	13.97	11.70	6.75	7.96	2.71	20.12	13.26	51.61	35.12	17.7	74.3
15	21.39	35.45	3.35	14.03	11.96	6.28	6.99	2.27	20.63	15.64	51.67	32.67	13.3	62.1

Table 34 Results with the Mn-Fe catalyst 6 (Berlin) in the fixed-bed reactor

1	program FT 540
2	fixed-bed reactor number 10
3	catalyst number 3
4	experiment number 12
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

. 34 Ergebnisse mit dem Mn-Fe-Katalysator 6 (Berlin) im Festbettreaktor

PROGRAMM FT 540 / FESTBETT-REAKTOR-NR. 10. 2 KATALYSATOR-NR. 3 3 VERSUCHS-NR. 12 4 KATALYSATOR-VOL. 5 1.000 L

	BEGINN 6 TAG	STD.	DAUER 7 STD.	ANALYS. 8 ZAHL	TEMP. 9 GRD.C	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH-GAS 11 NL/L*H	REST-GAS 12 NL/L*H	KREIS-LAUF 13 VERH.	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSETZE % VON EINSATZ CO	H2	CO+H2
1	6.02.	20.	18.	5.	267.	8.	99.	107.	85.	0.0	1.1951	1.1942	1.1969	31.42	31.37	31.40
2	6.02.	21.	18.	5.	267.	8.	114.	122.	96.	0.0	1.1914	0.9855	1.4636	52.80	49.06	49.41
3	7.02.	22.	22.	3.	269.	11.	88.	95.	72.	0.0	1.1548	1.1324	1.1993	37.81	36.48	37.20
4	7.02.	23.	23.	3.	268.	11.	105.	114.	74.	0.0	1.1521	0.9524	1.4671	62.09	48.75	55.89
5	9.02.	18.	12.	3.	272.	11.	85.	93.	70.	0.0	1.1143	1.0479	1.2336	39.56	35.74	37.75
6	9.02.	19.	12.	3.	275.	11.	105.	115.	70.	0.0	1.1156	0.6502	1.4806	73.43	54.97	64.69
7	10.02.	0.	7.	3.	276.	11.	83.	91.	69.	0.0	1.1486	1.1008	1.2756	38.75	35.50	37.25
8	10.02.	1.	7.	3.	276.	11.	106.	116.	70.	0.0	1.1601	0.6539	1.5540	75.31	56.23	65.49

	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-I % V. C4H8
1	25.65	9.34	9.56	11.64	9.87	59.59	72.49	87.64	96.27	89.09	2.17	4.00	11.81	1.92	92.85
2	25.19	8.21	9.28	11.50	9.95	61.17	73.76	87.79	93.91	79.06	1.93	2.94	14.36	1.73	94.22
3	22.46	9.15	8.63	10.69	9.05	62.51	67.73	85.75	92.52	75.72	2.83	3.98	14.17	1.31	91.75
4	22.51	8.29	8.39	10.77	8.99	63.56	69.44	86.92	92.66	77.42	2.13	3.11	15.78	1.56	93.66
5	23.74	9.26	8.91	11.11	9.42	61.10	69.89	86.02	93.67	77.07	2.64	3.96	14.46	1.87	92.11
6	24.05	9.05	9.22	12.00	9.68	59.96	59.53	85.66	94.73	78.60	2.27	3.95	11.70	1.57	92.77
7	23.52	9.27	9.36	11.06	9.36	61.45	68.60	84.20	94.50	77.47	2.96	4.12	14.07	1.44	91.63
8	23.07	8.96	8.89	11.92	9.42	60.91	56.51	85.30	94.64	77.64	2.79	4.21	13.96	1.50	91.73

	ZUSAMMENSETZUNG DES FT-PRODUKTES 21 MASSEN-% C2/C4 OLEF.	CH4	C2H6	C2H4	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/C4-O	C1A
1	25.17	10.49	6.80	2.77	10.01	1.48	8.36	1.38	58.71	27.02	39.78	33.20	16.1	63.9
2	24.76	9.23	6.72	2.56	9.92	1.45	8.12	1.61	60.39	27.15	40.06	32.79	24.4	99.7
3	22.02	10.27	5.71	2.92	8.99	1.57	7.32	1.61	61.67	25.95	40.81	33.25	16.7	75.7
4	22.11	9.32	5.72	2.70	9.09	1.56	7.30	1.59	62.72	25.89	41.10	33.01	25.2	113.9
5	23.39	10.39	6.02	2.91	9.37	1.60	7.93	1.60	60.21	25.85	40.24	33.91	17.9	76.8
6	23.58	10.15	5.38	3.92	10.16	1.78	8.04	1.50	59.08	22.82	43.09	34.10	31.0	131.6
7	23.38	10.43	5.96	2.93	9.36	1.57	7.76	1.47	60.55	25.84	40.54	33.62	17.5	75.8
8	22.63	10.08	4.92	4.06	9.89	1.79	7.82	1.47	59.98	21.75	43.73	34.55	30.6	135.2

Table 35 Results with the Mn-Fe catalyst 7 (Berlin) in the liquid phase reactor; seventh experiment

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 38
4	experiment number 124
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 35 Ergebnisse mit dem Mn-Fe-Katalysator 7 (Serlin) im Flüssigphasereaktor; 7. Versuch

PROGRAMM FT 940 / FLUESSIGPHASE-REAKTOR-NR. 1 / KATALYSATOR-NR. 3R / VERSUCHS-NR. 129 / SUSPENSIONS-VOL. 3.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/LOH	FRISCH -GAS NL/LOH	REST- GAS NL/LOH	KREIS -LAUF VERH.	CO/H2 FRISCH -GAS	CO/H2 REST- GAS	CO/H2 UMSATZ -VERH.	GAS-UMSAETZE % VON EINSATZ CO	H2	CO+H2
1	8.03.	17.	13.	10.	285.	11.	344.	344.	291.	0.0	1.0996	1.0872	1.1507	29.31	28.93	29.03
2	9.03.	5.	12.	9.	295.	11.	333.	352.	273.	0.0	1.1155	1.0766	1.2040	37.05	31.60	34.47
3	9.03.	17.	12.	10.	305.	11.	341.	360.	261.	0.0	1.0959	0.9918	1.2313	46.18	38.02	42.29
4	10.03.	5.	12.	10.	315.	11.	339.	358.	253.	0.0	1.0859	0.8665	1.4171	52.73	60.53	46.93
5	10.03.	17.	13.	10.	315.	11.	144.	165.	104.	0.0	1.1451	0.8805	1.3576	73.40	54.07	64.61
6	13.03.	17.	15.	14.	315.	11.	152.	170.	106.	0.0	1.0313	0.5605	1.6019	75.41	59.67	69.59
7	14.03.	10.	11.	8.	315.	11.	342.	361.	240.	0.0	1.0451	0.8055	1.2664	54.22	44.71	49.62
8	14.03.	20.	14.	12.	315.	11.	347.	367.	255.	0.0	1.1069	1.1881	1.4430	50.69	45.83	48.55
9	15.03.	11.	13.	7.	314.	11.	167.	185.	125.	0.0	1.1058	1.0751	1.4905	82.43	54.36	59.93
10	15.03.	22.	12.	8.	315.	8.	165.	183.	137.	0.0	1.1732	1.2429	1.5106	55.47	49.28	48.29
11	16.03.	11.	10.	8.	335.	8.	170.	188.	157.	0.0	1.1039	1.2856	1.3435	32.46	31.93	32.06
12	16.03.	1.	14.	7.	326.	16.	191.	211.	159.	0.0	1.2662	1.4169	1.3273	44.26	46.25	45.12
13	17.03.	12.	15.	15.	325.	16.	159.	178.	131.	0.0	1.6950	1.8909	1.6364	45.05	51.91	47.63
14	20.03.	17.	24.	17.	325.	16.	159.	171.	125.	0.0	1.5702	1.7855	1.3564	43.34	50.17	46.30
15	21.03.	13.	14.	11.	325.	16.	161.	172.	126.	0.0	1.4795	1.6355	1.3031	41.23	46.93	43.99

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	25.38	7.39	8.98	11.65	9.23	61.75	73.73	88.34	87.56	83.50	1.62	2.43	11.25	1.19	95.37
2	27.54	8.09	9.50	12.58	10.55	59.28	73.59	88.09	89.63	84.91	1.73	2.55	10.21	1.19	95.18
3	26.28	7.98	9.29	12.18	10.12	60.64	71.18	88.94	88.91	83.47	2.23	3.11	9.69	1.20	93.98
4	27.59	9.23	9.80	13.13	10.66	57.23	66.81	88.36	88.61	80.93	3.32	4.37	10.22	1.17	91.33
5	25.57	8.61	9.20	12.65	9.83	59.70	63.22	87.60	88.21	77.81	4.61	5.80	11.46	1.23	88.21
6	22.09	12.75	11.08	15.17	10.45	48.55	24.29	71.07	79.14	46.98	16.69	15.89	19.92	1.54	59.86
7	24.25	12.74	11.43	14.39	10.89	50.61	30.13	77.56	82.74	56.06	12.21	13.47	15.88	1.37	67.75
8	25.33	13.24	11.58	14.66	10.73	49.79	29.68	79.70	84.40	58.91	12.79	13.10	14.43	1.18	69.93
9	23.62	16.09	12.57	15.85	10.64	44.85	23.00	72.83	81.52	47.62	17.47	16.34	17.11	1.37	58.41
10	27.07	23.47	14.87	17.29	10.07	33.99	32.29	76.96	82.57	51.39	15.89	15.60	16.87	1.06	62.31
11	24.41	32.47	16.76	17.44	8.72	25.61	29.92	74.40	82.06	50.82	15.85	15.39	16.61	1.33	61.99
12	27.11	26.64	15.39	17.43	10.19	30.36	21.26	62.85	77.40	42.17	19.02	16.70	20.68	1.42	54.49
13	22.69	19.10	12.80	15.48	9.74	42.43	27.64	70.93	82.99	46.93	17.96	16.09	17.36	1.66	57.65
14	22.05	20.74	13.35	16.40	10.14	39.37	23.97	66.33	78.59	44.92	18.14	16.13	19.56	1.86	56.39
15	22.29	21.64	13.92	16.69	10.41	37.34	24.02	64.83	77.99	44.16	17.97	15.84	20.01	2.01	56.83

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN GRAMM/CBM C2/C4-O	C1+
1	24.97	8.88	6.47	2.54	10.17	1.40	8.18	1.23	60.98	25.91	40.53	33.56	14.8	99.1
2	27.09	9.09	6.80	2.65	11.32	1.43	9.20	1.23	58.52	25.39	40.66	33.95	19.1	99.4
3	25.36	8.99	6.36	2.76	10.66	1.39	8.84	1.15	59.85	24.60	41.21	34.18	22.3	98.4
4	27.38	10.33	6.43	3.42	11.19	1.58	9.24	1.23	56.37	23.74	42.07	34.19	25.9	95.5
5	25.12	9.68	5.71	3.56	10.79	1.62	8.52	1.18	58.85	22.73	43.34	33.92	33.0	131.3
6	21.40	15.24	2.79	9.35	10.45	4.46	8.16	2.23	47.32	13.02	48.82	38.16	28.1	131.4
7	23.58	14.17	4.02	7.61	10.85	3.29	8.72	1.88	49.46	17.03	46.91	36.06	21.6	99.9
8	24.64	14.73	4.47	7.28	11.16	3.03	8.81	1.69	48.84	18.14	46.12	35.74	24.1	97.8
9	22.82	17.79	3.28	9.51	11.16	4.36	8.38	1.97	43.55	14.37	46.89	38.74	26.9	117.7
10	25.90	25.68	4.59	10.33	12.73	3.99	8.58	1.84	32.26	17.77	49.15	33.13	24.7	95.3
11	22.35	35.06	4.76	11.09	11.65	4.16	6.76	1.93	24.31	20.54	50.12	29.33	14.3	62.3
12	21.30	24.04	3.11	12.34	10.52	6.64	7.48	2.78	29.02	14.81	49.55	35.64	18.5	88.2
13	21.93	21.10	3.60	9.55	10.84	4.65	7.59	1.85	41.02	15.59	49.65	34.76	20.1	94.6
14	21.14	22.75	3.07	10.49	10.43	5.55	7.64	2.16	37.98	14.51	49.34	36.15	19.2	91.0
15	21.33	23.69	3.10	13.85	10.14	5.00	7.77	2.27	34.97	15.09	49.56	35.44	19.4	89.1

Table 36 Results with the Mn-Fe Catalyst 7 (Berlin) in the liquid phase reactor; second experiment

1 program FT 540
2 liquid phase reactor number 2
3 catalyst number 38
4 experiment number 134
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin content of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 36 Ergebnisse mit dem Mn-Fe-Katalysator 7 (Berlin) im Flüssigphasereaktor; 2. Versuch

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 2. / KATALYSATOR-NR. 38 / VERSUCHS-NR. 134 / SUSPENSIONS-VOL. 5.000 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREISLAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VON EINSATZ CO	H2	CO+H2
1	30.08.	16.	0.	3.	275.	21.	321.	336.	274.	0.0	1.0495	0.9764	1.2672	30.37	25.15	27.82
2	1.09.	12.	24.	3.	294.	11.	342.	359.	246.	0.0	0.9909	0.7382	1.3542	56.06	41.02	48.51
3	4.09.	15.	23.	6.	304.	11.	342.	361.	233.	0.0	1.0100	0.6418	1.4263	66.28	46.94	56.66
4	5.09.	11.	24.	8.	313.	11.	339.	359.	231.	0.0	1.0277	0.6170	1.4334	69.97	49.99	60.12
5	6.09.	11.	12.	3.	323.	11.	340.	361.	220.	0.0	1.0249	0.6204	1.3981	72.66	54.83	63.85
6	6.09.	20.	12.	4.	323.	11.	337.	359.	267.	0.0	1.0257	0.8529	1.2760	53.57	40.55	45.52
7	7.09.	11.	14.	5.	324.	11.	217.	231.	188.	0.0	1.0108	0.9225	1.2142	36.37	30.27	33.34
8	7.09.	0.	12.	6.	335.	11.	219.	235.	191.	0.0	1.0043	0.8925	1.2547	38.56	30.87	34.72
9	8.09.	12.	14.	7.	335.	11.	167.	184.	145.	0.0	1.0675	0.9380	1.2957	43.95	36.20	40.20

NR.	SELEKTIVITAETEN % VON C1+ C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION TRANS C4H8-1	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	25.93	9.45	8.54	12.02	11.22	58.77	68.65	86.73	86.02	80.02	3.00	3.00	11.92	2.06	93.03
2	24.59	8.57	8.25	12.05	10.27	60.86	62.76	87.49	86.31	79.50	3.40	3.40	12.17	1.52	92.11
3	25.91	10.32	9.30	13.33	10.92	56.13	53.30	85.79	87.16	73.51	6.03	6.03	11.57	1.27	84.34
4	27.34	14.78	11.78	15.91	11.59	45.95	37.54	81.38	86.05	62.95	11.55	11.55	12.41	1.34	73.15
5	25.88	22.76	15.03	17.54	11.08	33.59	25.53	75.38	79.60	51.47	14.07	14.07	19.03	1.37	64.46
6	23.20	30.25	16.97	17.54	9.96	25.28	21.40	70.13	72.97	48.57	12.25	12.20	25.54	1.44	66.56
7	21.99	35.18	17.26	16.27	9.31	21.99	22.62	67.80	75.76	49.64	13.06	13.06	22.28	1.96	65.53
8	23.05	37.31	17.77	16.17	9.04	19.70	26.42	70.19	77.54	51.85	12.85	12.85	20.29	2.17	66.86
9	23.75	33.76	16.95	16.42	9.29	23.59	28.07	71.71	77.66	52.21	12.73	12.73	20.38	1.95	67.22

NR.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% C2/C4 OLEF.	CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	25.45	10.60	5.75	2.82	10.23	1.64	9.47	1.59	57.90	22.61	40.18	37.20	14.4	56.6
2	24.15	9.62	5.09	3.24	10.35	1.55	8.71	1.43	60.01	21.05	42.37	36.07	23.9	98.9
3	25.37	11.55	4.85	4.56	11.20	1.94	9.31	1.42	55.16	19.13	44.15	36.72	29.2	115.0
4	26.53	16.40	4.29	7.65	12.56	3.01	9.68	1.63	44.77	16.17	47.35	36.48	32.0	120.7
5	24.75	24.90	3.67	11.47	12.65	4.33	8.43	2.24	32.31	14.83	51.10	34.07	31.2	126.0
6	21.92	32.69	3.43	13.50	11.62	5.19	6.97	2.63	24.07	15.65	53.02	31.32	19.4	88.7
7	20.65	37.79	3.67	13.44	10.36	5.16	6.62	2.19	20.78	17.76	50.17	32.07	13.3	64.4
8	21.60	39.98	4.40	13.13	10.63	4.73	6.57	1.97	18.58	20.37	49.22	30.41	14.4	66.9
9	22.37	36.37	4.48	12.31	11.09	4.58	6.79	2.02	22.35	20.03	49.59	30.38	17.4	77.9

Table 37 Results with the Mn-Fe catalyst 7 (Berlin) in the fixed-bed reactor

1 program FT 540
2 fixed bed reactor number 4
3 catalyst number 38
4 experiment number 3
5 catalyst volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yields
24 date
25 hour
26 degrees C

Tab. 37 Ergebnisse mit dem Mn-Fe-Katalysator 7 (Berlin) im Festbettreaktor

PROGRAMM FT 542 / FESTBETT-REAKTOR-NR. 4. 2 KATALYSATOR-NR. 38 3 VERSUCHS-NR. 3 4 KATALYSATOR-VOL. 0.050 L 5

NR.	BEGINN 6 TAG	STD.	DAUER STD.	7 ANALYS. ZAHL 8	TEMP. 9 GRD.	DRUCK 10 BAR	10a H2+CO EINS. NL/L*H	11 FRISCH -GAS NL/L*H	12 REST- GAS NL/L*H	13 KREIS -LAUF VERH.	14 CO/H2 FRISCH -GAS	15 CO/H2 REST- GAS	16 CO/H2 UMSATZ -VERH.	17 GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	25.09.	15.	14.	5.	260.	11.	116.	127.	86.	0.0	1.2418	1.1306	1.3569	53.79	49.15	51.67
2	28.08.	12.	9.	3.	260.	11.	120.	133.	87.	0.0	1.2333	1.0916	1.4279	59.91	51.91	56.33
3	29.08.	9.	13.	4.	260.	11.	118.	131.	75.	0.0	1.2375	0.6705	1.6023	81.37	62.85	73.09
4	29.08.	21.	12.	4.	275.	11.	116.	129.	49.	0.0	1.2365	0.4156	1.6704	90.29	69.14	79.83
5	30.08.	10.	24.	6.	280.	11.	99.	113.	56.	0.0	1.2128	0.2498	1.5708	94.45	72.92	84.72
6	31.08.	10.	24.	6.	280.	11.	224.	249.	137.	0.0	1.2347	0.4563	1.5813	89.51	69.11	79.83
7	1.09.	10.	16.	3.	291.	11.	377.	418.	241.	0.0	1.2466	0.5603	1.5427	91.80	66.10	74.81
8	5.09.	10.	24.	8.	296.	11.	351.	391.	224.	0.0	1.2771	0.6243	1.6205	87.86	64.93	74.99
9	6.09.	10.	24.	8.	290.	11.	347.	386.	220.	0.0	1.2777	0.5418	1.6568	85.53	66.00	76.99
10	7.09.	13.	11.	3.	293.	11.	315.	349.	262.	0.0	1.2107	0.8804	1.7400	53.05	36.61	45.58

NR.	SELEKTIVITAETEN % VON C1+ 18 C2/C4 OLEF.	C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	21.80	6.45	7.08	9.44	8.79	68.24	79.96	87.03	90.08	76.50	6.79	6.79	7.88	2.04	84.92
2	20.72	6.55	6.89	9.07	8.48	69.11	78.87	86.86	88.38	78.52	4.93	4.93	9.54	2.08	88.45
3	21.74	7.01	7.61	10.26	9.47	66.65	70.73	87.77	86.74	82.44	2.15	2.15	11.59	1.67	95.14
4	22.25	7.98	8.12	10.99	8.89	64.02	61.13	87.06	86.79	79.56	3.61	3.61	11.63	1.58	91.67
5	22.88	8.54	8.50	11.68	9.23	62.04	55.55	86.62	87.05	76.79	5.13	5.13	11.49	1.46	89.22
6	24.61	12.15	9.80	13.61	10.14	54.30	46.69	83.33	85.84	71.65	7.09	7.09	12.69	1.47	93.47
7	24.56	12.69	9.74	13.36	10.56	53.64	44.25	83.89	85.54	71.34	7.10	7.10	13.02	1.44	93.40
8	25.47	9.44	8.96	12.93	10.48	58.20	55.24	86.91	88.63	77.84	5.39	5.39	9.98	1.39	87.83
9	26.07	10.32	9.54	13.77	10.92	55.45	47.99	86.01	88.36	74.10	7.13	7.13	10.25	1.38	93.86
10	26.63	12.38	9.80	12.39	10.31	55.12	69.24	87.97	86.74	79.27	3.73	3.73	11.83	1.43	91.39

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN 23 G/NM3(IG) C2/4-O	C1+
1	21.52	7.28	5.59	1.50	8.11	1.27	7.82	0.99	67.55	25.99	37.69	36.33	22.8	106.0
2	20.44	7.49	5.36	1.54	7.69	1.22	7.40	1.01	68.40	26.20	37.62	36.18	23.6	115.5
3	21.41	7.99	5.30	2.36	8.87	1.30	7.24	1.15	65.99	24.77	41.41	33.82	32.0	149.5
4	21.87	8.97	4.88	3.23	9.41	1.47	7.59	1.20	63.17	22.31	43.01	34.69	35.6	162.9
5	22.46	9.59	4.64	3.98	9.93	1.61	7.89	1.22	61.14	20.64	44.23	35.13	38.8	172.6
6	24.01	13.56	4.46	5.47	11.36	2.32	8.59	1.45	53.19	12.57	46.07	35.35	38.7	161.3
7	23.93	14.15	4.20	5.67	10.93	2.20	8.91	1.54	52.50	17.54	45.56	36.90	36.1	151.0
8	24.99	10.59	4.95	4.21	11.09	1.74	9.11	1.21	57.26	19.42	44.11	36.47	38.1	152.6
9	25.51	11.56	4.48	5.20	11.59	1.98	9.44	1.29	54.46	17.56	45.43	37.01	39.9	156.2
10	26.32	13.93	6.63	3.16	10.65	1.53	8.74	1.38	54.07	25.47	40.93	33.59	24.0	92.3

Table 38a Results with the Mn-Fe catalyst 1 (Berkamen) part 1

1	program FT 540
2	liquid phase reactor number 1
3	catalyst number 26
4	experiment number 81
5	suspension volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 38a Ergebnisse mit dem Mn-Fe-Katalysator 1 (Bergkamen) Teil 1

PROGRAMM FT 540 / FLUESSIGPHASE-REAKTOR-NR. 1. KATALYSATOR-NR. 26 VERSUCHS-NR. 81 SUSPENSIONS-VOL. 3.303 L

NR.	BEGINN TAG.	BEGINN STD.	DAUER STD.	ANALYS.-ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	4.01.	2.	19.	15.	279.	11.	334.	334.	299.	0.0	1.1492	0.0853	2.3267	24.73	17.29	19.93
2	4.01.	17.	21.	21.	279.	11.	334.	334.	290.	0.2	1.1326	0.9492	2.4207	24.51	17.31	19.95
3	5.01.	14.	19.	19.	279.	11.	334.	334.	297.	0.0	1.1216	0.9451	2.3551	27.29	13.08	22.81
4	7.01.	9.	19.	15.	279.	15.	330.	339.	252.	0.0	1.1905	1.0608	1.6733	32.45	26.32	29.71
5	11.01.	9.	18.	14.	278.	21.	339.	339.	232.	0.0	1.0987	0.8823	1.4507	47.64	35.79	41.95
6	11.01.	23.	18.	18.	278.	21.	308.	309.	224.	0.0	1.1063	0.9084	1.4701	49.84	39.68	44.44
7	12.01.	23.	18.	18.	287.	21.	307.	307.	210.	0.0	1.0934	0.9041	1.4311	59.97	45.66	55.10
8	13.01.	14.	19.	18.	288.	21.	306.	306.	204.	0.0	1.1033	0.8082	1.4140	62.41	49.71	55.31
9	14.01.	9.	16.	16.	289.	21.	305.	305.	202.	0.2	1.1209	0.8153	1.4494	63.40	49.69	55.93
10	17.01.	13.	19.	16.	297.	21.	333.	333.	173.	0.0	1.2591	0.6587	1.1015	78.29	57.14	64.56
11	18.01.	5.	18.	10.	297.	21.	305.	305.	181.	0.0	1.0936	0.7142	1.3014	71.65	57.71	64.32
12	18.01.	23.	19.	18.	297.	21.	334.	334.	191.	0.0	1.3372	0.7209	1.4022	65.17	53.93	61.59
13	19.01.	18.	17.	17.	307.	21.	304.	304.	165.	0.0	1.1068	0.6206	1.3796	79.93	66.14	72.42
14	20.01.	11.	18.	10.	307.	21.	304.	304.	169.	0.0	1.1390	0.6039	1.3004	83.17	63.80	72.41
15	21.01.	5.	18.	18.	307.	21.	304.	304.	169.	0.0	1.3861	0.5937	1.3778	80.26	63.70	72.12

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	23.49	6.90	7.02	9.15	8.29	60.67	83.46	85.82	81.93	78.07	2.72	1.04	17.28	0.89	95.43
2	20.55	6.70	6.93	9.09	8.43	68.95	83.13	86.12	82.58	79.94	1.65	0.96	16.13	1.31	96.84
3	22.35	7.78	7.94	10.34	9.10	64.84	79.91	86.36	83.30	80.76	1.49	1.03	15.57	1.13	96.95
4	29.17	13.93	11.57	14.99	13.32	47.39	53.45	81.56	83.91	75.39	4.96	5.47	17.63	1.58	87.13
5	24.93	13.95	11.27	17.61	13.33	34.93	21.39	69.57	79.52	50.02	9.29	11.21	27.92	1.56	75.94
6	24.19	17.27	12.52	16.95	13.39	43.97	21.96	73.35	71.46	51.93	9.77	11.76	27.55	1.61	72.11
7	23.61	17.93	13.85	19.74	14.57	33.01	14.75	61.60	69.79	39.53	14.36	14.95	29.63	1.59	57.41
8	21.61	20.65	14.13	18.61	13.90	32.02	12.25	57.46	66.56	37.92	15.23	14.31	31.79	1.65	55.42
9	21.79	19.59	13.64	18.20	13.51	35.07	12.08	59.59	67.33	37.51	14.94	14.09	31.72	1.65	55.77
10	19.77	15.14	12.75	16.96	13.71	41.96	11.04	49.98	65.40	27.03	21.18	17.19	32.69	1.72	41.33
11	19.27	14.71	11.97	16.57	12.98	43.96	13.40	54.33	67.34	29.76	22.19	17.21	31.02	1.64	44.25
12	20.55	15.03	12.34	16.93	13.85	41.94	14.21	55.73	67.55	30.15	20.16	17.24	33.87	1.59	44.64
13	16.76	17.22	13.55	13.12	13.48	37.63	9.16	45.63	61.26	22.89	22.07	16.33	36.77	1.97	37.37
14	16.98	16.83	13.41	17.97	13.04	38.76	8.71	43.03	61.99	23.23	22.11	16.65	36.39	1.98	37.48
15	17.13	16.98	13.54	18.03	13.35	30.13	8.61	42.88	61.55	23.33	21.93	16.30	36.37	2.09	37.93

NR.	C2/C4 PARAF.	ZUSAMMENSETZUNG DES C1 - PRODUKTES MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	20.18	7.75	5.77	1.23	7.73	1.34	6.63	1.54	67.97	28.58	38.31	33.11	7.4	39.6
2	20.25	7.55	5.67	1.23	7.71	1.30	6.56	1.50	68.17	28.3	38.09	33.49	8.2	40.6
3	22.48	8.76	6.24	1.68	8.78	1.45	7.46	1.55	64.38	27.77	39.05	33.18	9.5	42.1
4	28.39	14.51	6.02	5.62	11.93	2.82	10.48	2.59	46.39	21.21	41.99	37.90	17.2	59.9
5	23.96	23.79	2.71	10.69	11.77	5.39	9.36	4.06	35.64	11.17	49.36	39.27	[illegible]	83.2
6	23.29	19.97	2.61	13.31	11.41	5.34	9.26	3.76	33.59	11.22	45.59	39.77	23.6	85.3
7	22.59	21.71	1.94	12.11	11.95	7.21	9.54	4.51	31.97	8.65	48.90	42.45	23.7	104.8
8	20.63	22.55	1.65	12.69	10.21	7.92	8.77	4.57	31.64	9.21	49.49	42.51	22.7	119.1
9	20.35	21.44	1.70	12.17	10.45	7.30	8.70	4.33	33.97	8.19	50.09	41.73	23.4	112.5
10	19.35	16.66	1.30	11.23	8.13	9.56	8.63	4.73	40.16	7.21	45.02	47.77	24.6	134.2
11	18.06	14.21	1.55	11.71	8.76	7.56	8.36	4.20	47.66	8.28	46.97	44.79	24.5	129.4
12	19.79	15.56	1.69	13.93	9.06	7.96	9.01	4.49	40.67	8.54	45.93	45.54	24.4	121.1
13	16.14	19.95	1.36	12.76	7.98	10.75	7.91	5.18	38.41	6.62	44.13	49.28	22.9	143.0
14	16.21	10.44	1.12	12.57	7.40	10.27	7.74	4.92	37.54	6.88	45.51	47.60	23.3	143.[illegible]
15	16.37	10.67	1.12	12.71	7.39	10.32	7.67	5.09	36.92	6.92	45.14	48.04	23.3	142.5

Table 38b Results with the Mn-Fe catalyst 1 (Bergkamen) part 2

1 program FT 540
2 liquid phase reactor number 1
3 catalyst number 26
4 experiment number 81
5 suspension volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 38b Ergebnisse mit dem Mn-Fe-Katalysator 1 (Bergkamen); Teil 2

PROGRAMM FT 540 / 1 FLUESSIGPHASE-REAKTOR-NR. 1. 2 KATALYSATOR-NR. 3 26 VERSUCHS-NR. 4 81 SUSPENSIONS-VOL. 5 3.000 l

NR.	BEGINN 6 TAG	BEGINN STD	DAUER 7 STD.	ANALYS. ZAHL 8	TEMP. 9 GRD.C	DRUCK 10 BAR	H2+CO EINS. 10a NL/L*H	FRISCH-GAS NL/L*H 11	REST-GAS NL/L*H 12	KREISLAUF VERH. 13	CO/H2 FRISCH-GAS 14	CO/H2 REST-GAS 15	CO/H2 UMSATZ-VERH. 16	GAS-UMSAETZE % VON EINSATZ CO 17	GAS-UMSAETZE % VON EINSATZ H2	GAS-UMSAETZE % VON EINSATZ CO+H2
1	24.01.	12.	18.	16.	325.	21.	306.	306.	170.	0.0	1.0804	0.5250	1.3409	84.49	60.08	76.60
2	25.01.	5.	18.	18.	322.	21.	306.	306.	169.	0.0	1.0929	0.5405	1.3492	84.33	68.31	76.67
3	25.01.	23.	18.	18.	322.	21.	306.	306.	169.	0.0	1.0871	0.5322	1.3459	84.43	68.19	76.65
4	26.01.	18.	18.	17.	322.	21.	319.	319.	174.	0.0	1.3350	0.8028	1.5479	82.81	71.56	78.05
5	1.02.	6.	18.	18.	318.	16.	326.	326.	199.	0.0	1.3100	0.9576	1.5591	70.87	59.96	66.16
6	2.02.	0.	13.	18.	317.	16.	327.	327.	197.	0.0	1.3134	0.9330	1.5409	72.03	60.59	67.07
7	3.02.	2.	10.	10.	313.	11.	331.	331.	271.	0.0	1.5469	1.4487	1.7494	34.33	30.36	32.77
8	3.02.	12.	18.	18.	312.	11.	332.	332.	280.	0.0	1.6025	1.4749	1.9626	37.09	26.17	29.79
9	4.02.	6.	18.	18.	312.	11.	330.	330.	279.	0.0	1.6225	1.5213	1.9121	30.53	25.90	28.76
10	7.02.	12.	13.	17.	316.	11.	322.	322.	259.	0.0	1.3666	0.8336	1.6039	45.47	30.74	38.10
11	8.02.	5.	18.	18.	315.	11.	323.	323.	261.	0.0	1.3987	0.8704	1.6194	43.36	29.15	36.55
12	8.02.	23.	19.	18.	315.	11.	322.	322.	261.	0.0	1.3699	0.8521	1.6068	43.22	28.74	36.21

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ 18 C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4
1	11.80	25.14	18.29	21.27	14.03	21.27	4.18	21.68	46.78
2	12.49	24.26	17.38	20.26	13.60	23.90	4.63	24.47	48.37
3	13.39	24.54	17.21	20.89	14.06	23.30	4.93	26.01	50.51
4	18.64	17.80	13.32	18.80	13.43	36.65	8.95	46.40	64.65
5	25.94	16.64	11.33	19.02	14.08	38.93	22.82	68.83	77.75
6	25.54	16.75	10.90	17.85	13.97	40.63	22.01	68.81	77.68
7	36.07	14.21	9.06	18.48	17.91	39.55	47.78	85.50	86.89
8	37.05	14.41	9.95	19.35	17.58	38.71	50.04	86.36	87.37
9	36.60	13.68	9.66	18.26	18.15	40.24	51.61	86.90	86.76
10	34.33	27.29	18.12	23.90	14.16	11.55	26.26	63.85	74.71
11	36.43	26.24	16.61	23.19	21.40	13.55	29.35	68.31	77.27
12	36.23	26.71	16.61	23.26	20.66	12.96	28.05	67.74	77.30

NR.	ZUSAMMENSETZUNG DER C4-FRAKTION 20 TRANS C4H8-1	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	16.22	17.63	11.92	50.61	3.61	35.44
2	17.41	18.47	12.49	48.27	3.35	36.00
3	17.98	19.37	13.49	46.12	3.37	35.52
4	25.57	22.75	16.32	33.49	1.87	39.56
5	42.61	18.66	16.48	21.32	0.93	54.81
6	43.93	17.96	15.82	21.28	1.04	56.51
7	65.26	11.31	10.32	12.24	0.88	75.10
8	71.58	8.52	7.29	11.78	0.85	81.91
9	69.13	9.47	8.16	12.33	0.92	79.68
10	41.00	18.04	15.67	23.79	1.51	54.88
11	44.51	17.29	15.47	21.32	1.41	57.60
12	44.77	17.35	15.18	21.42	1.28	57.92

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES 21 MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	11.10	27.06	0.72	17.68	4.34	16.42	6.04	7.41	20.32
2	11.70	26.17	0.76	16.76	4.31	15.57	6.20	6.96	22.87
3	12.62	26.48	0.80	16.54	5.13	15.28	6.70	6.00	22.29
4	17.84	19.49	1.14	12.44	8.39	10.07	9.31	4.71	35.44
5	25.02	18.36	2.49	9.04	11.97	5.68	10.56	3.13	38.76
6	24.65	18.49	2.40	9.32	11.85	5.63	10.40	3.09	39.42
7	35.10	15.91	4.58	5.37	15.37	2.73	15.14	2.37	38.63
8	36.35	16.24	4.84	5.19	16.26	2.69	15.05	2.24	37.80
9	35.66	15.74	4.88	4.88	15.46	2.44	15.34	2.43	39.35
10	32.53	29.55	4.51	13.56	14.46	8.58	13.56	4.76	11.02
11	34.62	28.52	4.59	12.01	15.36	7.32	14.98	4.57	12.96
12	34.41	29.01	4.42	12.16	14.96	7.46	15.02	4.57	12.39

NR.	ZUSAMMENSETZUNG DER C2/C4-OLEFINE 22 % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(CO) 23 C2/4-O	C1+
1	6.48	39.09	54.43	16.5	148.2
2	6.44	40.87	52.69	17.5	140.8
3	6.34	40.61	53.05	18.9	148.7
4	6.40	47.31	46.60	27.5	154.2
5	9.97	47.83	42.20	33.0	131.9
6	9.73	48.09	42.18	32.9	133.7
7	13.06	43.80	43.14	23.2	66.3
8	13.44	45.10	41.47	21.6	60.0
9	13.63	43.35	43.03	20.7	58.0
10	13.86	44.45	41.69	24.2	74.3
11	13.25	43.49	43.27	24.8	71.6
12	12.86	43.48	43.66	24.4	70.8

Table 39 Results with the Mn-Fe catalyst 2 (Bergkamen)

1 program FT 540
2 fixed bed reactor number 3
3 catalyst number 47
4 experiment number 7
5 catalyst volume
6 beginning
7 duration
8 analysis number
9 temperature
10 pressure
10a $H_2 + CO$ charge
11 make-up gas
12 residual gas
13 circulation
14 make-up gas
15 residual gas
16 conversion ratio
17 gas conversion, percent of charge
18 selectivities
19 olefin contents of the fractions
20 composition of the C4 fraction
21 composition of the FT product, mass percent
22 composition of the C2/C4 olefins
23 yield
24 date
25 hour
26 degrees C

Tab. 39 Ergebnisse mit dem Mn-Fe-Katalysator 2 (Berghamen)

PROGRAMM FT 540 FESTBETT-REAKTOR-NR. 3. KATALYSATOR-NR. 47 VERSUCHS-NR. 7 KATALYSATOR-VOL. 0.050 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	15.09.	10.	16.	6.	275.	11.	271.	330.	183.	0.0	1.2062	0.7572	1.5117	71.74	57.24	65.17
2	18.09.	14.	18.	6.	280.	11.	92.	101.	57.	0.0	1.2023	0.5374	1.5700	84.09	65.39	75.16
3	19.09.	8.	15.	5.	285.	11.	95.	105.	56.	0.0	1.2011	0.3861	1.5527	85.57	67.55	75.57
4	20.09.	14.	15.	5.	290.	11.	213.	239.	130.	0.0	1.1367	0.5045	1.5286	95.91	66.61	77.03
5	21.09.	5.	15.	5.	296.	11.	210.	241.	131.	0.0	1.1851	0.4910	1.5247	86.72	67.41	77.68
6	21.09.	20.	15.	7.	300.	11.	221.	244.	130.	0.0	1.1944	0.4107	1.5267	85.09	69.14	79.96
7	22.09.	10.	23.	10.	300.	11.	354.	391.	222.	0.0	1.1798	0.6633	1.4612	80.17	64.73	73.09
8	25.09.	11.	12.	7.	305.	11.	359.	395.	220.	0.0	1.1832	0.5586	1.4813	84.74	67.69	76.93
9	25.09.	1.	10.	5.	310.	11.	363.	401.	220.	0.0	1.1839	0.5042	1.4545	86.64	69.63	76.35
10	4.10.	15.	22.	6.	311.	11.	391.	419.	248.	0.0	0.5994	0.1370	1.0466	91.53	52.41	67.06
11	5.10.	15.	32.	11.	310.	11.	204.	225.	131.	0.0	0.6062	0.0782	1.0646	94.00	53.53	68.81
12	9.10.	15.	24.	6.	311.	11.	182.	201.	110.	0.0	0.9330	0.1067	1.3465	93.11	64.42	78.27
13	10.10.	15.	24.	9.	310.	11.	201.	222.	122.	0.0	0.9432	0.1801	1.3747	93.13	63.89	78.06
14	11.10.	14.	24.	7.	320.	11.	139.	193.	109.	0.0	0.9369	0.1786	1.3407	93.38	65.26	78.86
15	12.10.	13.	17.	4.	330.	11.	143.	158.	85.	0.0	0.9383	0.1729	1.2994	94.39	67.94	80.69

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	26.03	6.98	9.09	13.29	10.61	60.13	67.79	87.46	89.72	65.23	8.25	8.25	12.57	1.70	80.76
2	27.96	7.23	9.34	13.61	10.47	59.35	67.78	88.75	88.58	74.87	5.85	5.85	10.07	1.40	66.78
3	27.62	6.84	8.77	13.57	10.68	60.14	69.45	89.79	88.82	75.85	6.47	6.47	9.25	1.33	65.43
4	28.93	9.53	9.96	14.87	11.46	54.18	58.03	87.48	88.27	70.46	8.70	8.93	10.53	1.23	79.82
5	29.21	8.24	9.31	14.11	11.15	57.20	62.68	88.43	88.83	73.92	7.45	7.45	9.96	1.21	83.22
6	28.29	8.49	9.43	14.39	11.31	56.41	59.20	87.85	88.81	71.33	8.74	8.74	10.01	1.18	80.31
7	29.37	9.89	9.96	14.38	11.52	53.76	60.23	88.25	88.86	73.59	7.63	7.63	9.93	1.26	82.83
8	30.72	11.51	10.08	16.18	12.14	49.20	54.32	87.21	88.15	70.21	8.97	8.97	10.71	1.14	79.66
9	33.36	11.35	10.73	16.12	12.07	49.73	51.93	87.00	88.28	58.07	10.10	10.10	10.62	1.10	77.11
10	27.37	22.60	14.82	19.40	13.16	30.01	20.77	73.84	75.63	41.69	16.97	16.97	22.82	1.56	55.12
11	26.91	22.39	14.64	20.48	14.41	28.30	15.49	69.73	72.11	33.34	19.39	19.30	26.39	1.50	46.26
12	35.66	13.85	12.15	19.43	17.65	36.69	37.60	81.89	84.38	52.95	15.97	15.97	14.00	1.12	62.38
13	39.38	13.15	11.97	20.16	21.17	33.56	30.83	82.34	89.69	53.82	15.93	15.93	13.18	1.13	62.82
14	39.10	15.70	12.94	20.74	19.93	30.69	33.81	80.96	84.99	47.57	18.71	18.71	13.70	1.02	55.97
15	35.76	17.71	13.75	21.17	13.52	28.04	27.92	78.69	82.42	40.97	20.72	20.72	16.49	1.09	49.71

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-C	C1+
1	26.41	7.85	6.02	3.07	11.44	1.72	8.95	1.54	59.40	23.80	43.22	32.89	35.2	133.2
2	27.43	8.25	6.23	3.17	11.89	1.59	9.31	1.24	58.32	22.12	43.35	33.93	42.1	153.6
3	27.22	7.71	6.00	2.97	11.87	1.57	9.35	1.22	59.45	22.05	43.60	34.35	44.3	162.8
4	28.34	10.49	5.67	4.19	12.76	1.91	9.91	1.37	53.30	19.99	45.02	34.99	44.4	156.7
5	27.73	9.76	5.73	3.66	12.26	1.68	9.73	1.27	56.40	20.68	44.22	35.10	44.1	158.9
6	27.75	9.54	5.47	4.04	12.42	1.83	9.86	1.29	55.59	19.70	44.76	35.44	45.2	163.0
7	29.79	11.09	5.88	4.16	12.88	1.80	10.03	1.31	52.85	20.42	44.73	34.85	42.8	148.4
8	33.31	12.97	5.77	5.20	13.79	2.12	10.45	1.46	48.23	19.24	45.53	34.83	46.8	155.8
9	29.47	12.60	5.55	5.25	13.71	2.15	10.42	1.43	48.77	18.71	46.19	35.10	47.1	159.2
10	26.15	24.73	2.94	12.73	13.70	5.07	9.51	3.10	20.88	11.25	52.37	36.38	34.5	132.1
11	25.71	24.17	2.17	13.67	13.61	6.21	9.92	3.19	27.32	8.42	53.00	38.58	34.8	135.5
12	34.52	15.38	4.45	7.92	19.92	1.58	16.71	2.72	35.79	12.86	44.24	42.90	56.4	157.3
13	39.90	14.42	4.52	7.63	16.14	3.63	17.64	3.05	32.77	11.80	42.15	46.06	60.2	157.1
14	36.88	17.38	4.26	8.89	16.25	4.91	16.40	3.00	29.84	11.48	44.06	44.46	58.2	157.9
15	34.44	19.53	3.70	10.24	16.04	4.56	14.72	3.25	27.94	10.74	46.58	42.60	55.7	165.5

Table 40 Results with the Fe-MN catalyst 3 (Bergkamen)

1	program FT 540
2	fixed bed reactor number 5
3	catalyst number 46
4	experiment number 8
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 40 Ergebnisse mit dem Mn-Fe-Katalysator 3 (Bergkamen)

PROGRAMM FT 340 FESTBETT-REAKTOR-NR. 5. KATALYSATOR-NR. 46 VERSUCHS-NR. 6 KATALYSATOR-VOL. 0.050 L

NR.	BEGINN TAG	BEGINN STD.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREIS-LAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	14.09.	23.	12.	5.	275.	11.	399.	441.	243.	0.0	1.2346	0.5347	1.5328	85.40	67.10	77.10
2	18.09.	16.	18.	6.	280.	11.	334.	370.	206.	0.0	1.2047	0.5622	1.5407	83.91	65.56	75.59
3	19.09.	10.	15.	5.	285.	11.	348.	386.	206.	0.0	1.2317	0.4315	1.5593	85.69	69.11	80.34
4	19.09.	1.	15.	5.	290.	11.	370.	410.	236.	0.0	1.1082	0.2370	1.5709	94.83	74.08	85.35
5	20.09.	16.	15.	5.	293.	11.	491.	543.	283.	0.0	1.1837	0.3751	1.4995	91.10	71.91	87.31
6	21.09.	23.	15.	6.	294.	11.	229.	254.	132.	0.0	1.1019	0.4130	1.4873	90.06	71.56	81.58
7	22.09.	11.	10.	9.	295.	11.	567.	627.	313.	0.0	1.1916	0.5069	1.4734	87.05	69.81	79.16
8	25.09.	12.	22.	12.	301.	11.	667.	733.	367.	0.0	1.1805	0.2340	1.4266	94.03	75.17	85.39
9	4.10.	13.	22.	7.	303.	11.	724.	805.	437.	0.0	0.6036	0.0456	1.0342	96.41	56.27	71.39
10	5.10.	19.	28.	8.	304.	11.	737.	793.	433.	0.0	0.6015	0.0565	1.0430	95.79	59.13	73.43
11	9.10.	17.	24.	6.	305.	11.	665.	735.	397.	0.0	0.9426	0.1508	1.3549	94.52	65.76	79.72
12	10.10.	18.	20.	9.	305.	11.	619.	684.	361.	0.0	0.9400	0.1691	1.2912	93.08	65.85	75.41
13	11.10.	16.	24.	6.	313.	11.	409.	451.	243.	0.0	0.9372	0.1852	1.3391	93.12	65.17	76.69
14	12.10.	15.	24.	9.	315.	11.	383.	423.	224.	0.0	0.9409	0.1683	1.3319	93.99	66.50	79.77
15	13.10.	10.	16.	6.	315.	11.	372.	439.	218.	0.0	0.9456	0.1791	1.2357	93.61	66.27	79.56

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	25.71	7.62	9.33	12.71	9.79	60.56	64.12	88.12	87.14	83.00	3.57	3.57	11.31	1.55	91.83
2	26.75	5.66	9.82	13.41	10.31	57.83	60.76	87.87	87.36	79.60	3.87	3.87	11.13	1.53	91.16
3	26.49	8.95	9.96	13.71	13.49	57.33	54.81	87.39	86.92	77.43	4.75	4.75	11.41	1.67	85.08
4	26.44	9.25	9.59	14.24	10.85	55.66	47.22	86.28	86.97	73.31	6.83	6.83	11.61	1.42	84.29
5	26.53	9.13	9.20	14.13	10.79	56.32	49.92	85.69	87.28	73.75	6.77	6.77	11.21	1.51	84.49
6	27.58	8.95	9.76	14.40	11.39	55.49	52.10	86.87	87.60	72.12	7.74	7.74	10.93	1.47	82.33
7	27.09	9.47	9.57	14.27	11.14	56.14	51.86	86.86	87.34	72.07	7.64	7.64	11.13	1.52	82.92
8	27.54	9.66	9.50	14.91	11.43	54.99	47.50	89.97	87.53	66.93	10.30	10.33	11.22	1.26	76.47
9	26.71	15.19	12.07	17.07	13.16	42.51	23.12	76.16	78.47	49.23	14.81	14.81	19.79	1.79	62.74
10	26.25	16.23	17.52	17.67	13.75	32.93	24.49	72.37	75.94	45.21	15.37	15.37	22.29	1.87	55.53
11	32.85	10.76	10.92	17.79	16.47	43.47	38.73	81.94	84.39	57.04	13.67	13.67	15.27	1.34	67.55
12	34.37	10.62	10.87	19.69	18.58	41.24	37.62	81.35	81.13	53.49	13.82	13.82	15.66	3.21	65.93
13	34.16	11.31	11.05	19.17	18.79	43.63	34.99	80.08	83.82	51.99	15.91	15.91	14.95	1.23	62.03
14	34.46	11.93	11.39	19.71	19.65	38.35	31.20	78.40	82.62	48.44	16.99	16.55	16.24	1.14	58.58
15	35.79	12.35	11.78	21.23	19.17	35.70	29.94	77.81	82.24	40.20	16.99	16.98	16.63	1.16	58.70

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT-PRODUKTES MASSEN-% CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	25.29	6.57	5.84	3.53	11.02	1.56	8.39	1.29	59.78	23.26	43.57	33.18	39.8	157.4
2	26.27	9.73	5.96	4.05	11.57	1.47	8.86	1.33	56.95	22.31	44.03	33.66	40.4	154.0
3	25.98	9.93	5.33	4.69	11.74	1.79	8.94	1.39	56.23	20.41	45.19	34.40	42.5	163.5
4	25.91	10.37	4.62	5.54	12.04	2.01	9.25	1.44	54.74	17.84	46.47	35.69	44.5	173.4
5	26.31	13.33	4.87	5.16	11.99	1.93	9.23	1.39	55.62	18.44	46.07	35.49	43.5	167.4
6	27.35	19.34	4.99	4.92	12.77	1.94	9.79	1.44	54.62	18.44	45.37	36.19	44.9	166.0
7	26.58	9.95	4.47	4.85	12.16	1.93	9.54	1.43	55.27	18.33	45.77	35.91	42.8	161.3
8	26.97	10.32	4.61	5.45	12.56	2.15	9.83	1.45	53.17	17.10	46.56	36.34	46.0	173.4
9	25.34	16.31	3.29	8.55	12.58	4.15	9.93	2.15	41.36	12.75	48.60	38.64	36.9	147.9
10	25.19	17.99	2.36	9.73	12.27	4.92	13.09	3.31	38.75	11.68	48.53	39.74	35.9	140.4
11	32.06	12.31	4.13	7.33	14.[illegible]7	3.34	13.56	2.62	47.00	12.87	44.82	42.30	51.7	161.2
12	33.52	11.45	3.97	7.39	14.43	3.56	14.73	3.54	40.44	11.50	44.24	43.86	53.8	160.4
13	33.29	12.61	3.77	7.50	14.13	3.73	15.34	3.07	39.83	11.32	42.59	46.09	52.9	158.9
14	33.53	13.24	3.65	8.17	14.27	4.12	15.90	3.44	37.50	10.30	42.57	47.13	53.9	163.7
15	34.43	13.43	3.53	8.63	16.04	4.79	15.33	3.43	34.90	9.85	46.10	46.09	55.7	160.1

Table 41 Results with the Mn-Fe catalyst 4 (Berkamen): first experiment

1	program FT 540
2	fixed bed reactor number 4
3	catalyst number 45
4	experiment number 5
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	H2 + CO charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 41 Ergebnisse mit dem Mn-Fe-Katalysator 4 (Bergkamen); 1. Versuch

PROGRAMM FT 540 / FESTBETT-REAKTOR-NR. 4. 2 KATALYSATOR-NR. 45 3 VERSUCHS-NR. 4 5 KATALYSATOR-VOL. 5 0.050 L

NR.	BEGINN TAG 24	BEGINN STD. 25	DAUER STD. 7	ANALYS. ZAHL 8	TEMP. GRD.C 21	DRUCK BAR 11	H2+CO EINS. NL/L*H 10A	FRISCH -GAS NL/L*H 11	REST- GAS NL/L*H 12	KREIS -LAUF VERH. 13	CO/H2 FRISCH -GAS 14	CO/H2 REST- GAS 15	CO/H2 UMSATZ -VERH. 16	GAS-UMSETZE % VON EINSATZ CO 17	H2	CO+H2
1	14.09.	10.	12.	4.	276.	11.	32.	91.	55.	0.0	1.2089	0.8763	1.4226	71.65	60.89	66.78
2	14.09.	22.	12.	5.	281.	11.	192.	212.	129.	0.0	1.2085	0.8025	1.4265	70.58	59.71	65.66
3	15.09.	11.	18.	6.	286.	11.	340.	377.	221.	0.0	1.2075	0.7339	1.4878	77.40	62.82	70.80
4	18.09.	15.	18.	6.	290.	11.	364.	403.	224.	0.0	1.2045	0.5533	1.5216	85.38	67.58	77.30
5	19.09.	9.	15.	5.	295.	11.	350.	388.	205.	0.0	1.2017	0.3552	1.5240	91.85	72.42	83.03
6	19.09.	0.	15.	5.	295.	11.	457.	506.	261.	0.0	1.1981	0.5926	1.4850	84.10	67.85	76.71
7	20.09.	15.	15.	5.	301.	11.	469.	519.	290.	0.0	1.1861	0.4859	1.4805	87.87	70.40	79.88

NR.	SELEKTIVITAETEN 18 C2/C4 OLEF.	% VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN 19 C2	C3	C4
1	29.09	12.19	10.93	15.30	11.40	50.19	54.38	86.71	86.72
2	28.05	10.01	9.90	13.99	10.97	55.13	61.21	88.21	87.89
3	28.37	9.99	10.10	14.50	11.29	54.12	56.56	87.79	87.86
4	26.22	10.82	10.50	15.19	11.45	52.04	49.13	86.66	87.38
5	27.43	11.93	10.93	15.96	11.73	49.54	37.35	84.49	86.05
6	28.49	11.37	10.55	15.64	11.78	50.66	45.07	86.13	87.16
7	27.99	12.01	10.74	16.16	12.05	49.04	37.06	84.37	86.11

20 ZUSAMMENSETZUNG DER C4-FRAKTION

NR.	TRANS C4H8-1	TRANS C4H8-2	CIS C4H8-2	N- C4H10	I- C4H10	BUTEN-1 % V. C4H8
1	72.05	7.34	7.34	11.83	1.44	83.08
2	77.57	5.16	5.16	10.53	1.61	88.25
3	75.92	5.97	5.97	10.65	1.49	86.42
4	71.86	7.76	7.76	11.24	1.38	82.24
5	64.17	10.94	10.94	12.74	1.22	74.57
6	69.13	9.01	9.01	11.57	1.27	79.32
7	62.09	12.01	12.01	12.64	1.25	72.11

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES 21 MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+
1	28.40	13.60	5.80	5.22	12.75	2.08	9.65	1.53	49.17
2	27.49	11.22	5.94	4.04	12.10	1.69	9.45	1.35	54.21
3	27.80	11.19	5.61	4.59	12.47	1.82	9.72	1.39	53.20
4	27.59	12.13	4.91	5.71	12.97	2.08	9.79	1.46	51.06
5	26.93	13.31	3.94	7.09	13.15	2.53	9.84	1.65	48.49
6	27.33	12.73	4.64	6.07	13.16	2.22	10.32	1.53	49.66
7	27.29	13.39	3.88	7.06	13.29	2.58	10.12	1.69	47.99

NR.	ZUSAMMENSETZUNG 22 DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	23 AUSBEUTEN G/NM3(IG) C2/4-O	C1+
1	20.43	45.60	33.97	38.3	139.0
2	21.62	44.01	34.37	36.7	133.4
3	20.16	44.87	34.96	40.9	143.8
4	17.91	46.64	35.45	43.2	156.6
5	14.65	48.81	36.54	45.1	167.6
6	16.69	47.29	36.02	43.2	155.2
7	14.21	48.71	37.08	44.0	161.3

Table 42 Results with the Mn-Fe catalyst 4 (Bergkamen); second experiment

1	program FT 540
2	fixed bed reactor number 4
3	catalyst number 45
4	experiment number 8
5	catalyst volume
6	beginning
7	duration
8	analysis number
9	temperature
10	pressure
10a	CO + H2 charge
11	make-up gas
12	residual gas
13	circulation
14	make-up gas
15	residual gas
16	conversion ratio
17	gas conversion, percent of charge
18	selectivities
19	olefin contents of the fractions
20	composition of the C4 fraction
21	composition of the FT product, mass percent
22	composition of the C2/C4 olefins
23	yield
24	date
25	hour
26	degrees C

Tab. 42 Ergebnisse mit dem Mn-Fe-Katalysator 4 (Bergkamen); 2. Versuch

PROGRAMM FT 543 / FESTBETT-REAKTOR-NR. 4. KATALYSATOR-NR. 45 VERSUCHS-NR. 48 KATALYSATOR-VOL. 0.050 L

NR.	BEGINN TAG	BEGINN STU.	DAUER STD.	ANALYS. ZAHL	TEMP. GRD.C	DRUCK BAR	H2+CO EINS. NL/L*H	FRISCH-GAS NL/L*H	REST-GAS NL/L*H	KREISLAUF VERH.	CO/H2 FRISCH-GAS	CO/H2 REST-GAS	CO/H2 UMSATZ-VERH.	GAS-UMSAETZE % VOM EINSATZ CO	H2	CO+H2
1	4.10.	22.	24.	5.	271.	11.	107.	117.	64.	0.0	0.5552	0.0562	1.0403	92.84	52.47	67.40
2	5.10.	17.	34.	13.	271.	11.	115.	127.	70.	0.0	0.6056	0.0734	1.0522	94.19	52.14	67.98
3	16.10.	23.	13.	4.	236.	11.	263.	290.	154.	0.0	0.6367	0.0595	1.0263	95.82	56.66	71.45
4	17.10.	13.	24.	8.	286.	11.	174.	214.	114.	0.0	0.6113	0.0658	1.0295	93.33	56.61	71.30
5	19.10.	15.	23.	6.	236.	11.	217.	240.	128.	0.0	0.6097	0.0724	1.0236	94.03	56.48	71.02
6	9.10.	15.	24.	6.	271.	11.	97.	108.	54.	0.0	0.9246	0.1594	1.3607	93.74	63.70	78.13
7	10.10.	20.	20.	4.	271.	11.	131.	111.	56.	0.0	0.9205	0.0562	1.3423	96.98	67.21	81.55
8	12.10.	14.	24.	5.	285.	11.	135.	116.	58.	0.0	0.9368	0.0956	1.3052	97.24	69.79	83.67
9	13.10.	17.	16.	6.	235.	11.	134.	115.	58.	0.0	0.9409	0.1026	1.3151	96.63	69.12	82.46
10	16.10.	10.	12.	4.	245.	11.	209.	231.	117.	0.0	0.9553	0.1653	1.3206	94.45	67.91	80.89
11	25.10.	18.	34.	8.	296.	11.	198.	220.	112.	0.0	1.2664	0.4249	1.5470	91.61	74.99	84.27
12	27.10.	12.	14.	3.	296.	11.	313.	340.	197.	0.0	1.2737	0.8636	1.4737	77.77	67.22	73.13
13	30.10.	12.	22.	3.	285.	11.	208.	320.	192.	0.0	1.2657	0.9805	1.4409	70.80	62.25	67.54
14	31.10.	10.	20.	5.	295.	11.	332.	335.	164.	0.0	1.2554	0.7293	1.4916	82.09	69.02	76.25
15	3.11.	11.	23.	6.	295.	11.	333.	370.	218.	0.0	1.2659	0.8435	1.4541	76.64	64.54	71.48

NR.	C2/C4 OLEF.	SELEKTIVITAETEN % VON C1+ C1	C2	C3	C4	C5+	OLEFIN-GEHALTE DER FRAKTIONEN C2	C3	C4	ZUSAMMENSETZUNG DER C4-FRAKTION C4H8-1	TRANS C4H8-2	CIS C4H8-2	N-C4H10	I-C4H10	BUTEN-1 % V. C4H8
1	24.19	8.61	9.11	12.86	13.19	55.23	55.82	83.67	81.79	68.01	6.85	6.49	[illegible]	2.28	83.15
2	25.33	9.91	9.74	13.71	11.01	56.22	47.53	82.62	82.37	64.17	9.10	[illegible]	[illegible]	2.11	77.93
3	29.34	11.63	13.74	14.89	17.22	43.54	26.96	75.39	77.05	36.74	20.56	20.55	[illegible]	1.73	47.19
4	23.74	10.93	10.33	16.49	17.35	45.31	28.33	76.26	77.72	37.05	20.34	20.34	20.44	1.84	47.57
5	28.44	10.92	10.40	16.53	16.72	45.43	27.31	76.04	77.61	37.37	20.12	20.12	20.44	1.75	48.16
6	23.13	7.21	9.39	13.97	13.31	55.83	55.70	85.42	85.96	70.85	7.54	7.54	12.43	1.59	82.45
7	30.23	8.11	9.97	15.95	15.09	50.93	41.14	82.90	85.67	56.40	14.64	14.64	12.75	1.58	65.83
8	29.85	10.45	13.75	17.33	16.64	45.12	27.89	78.34	81.13	37.17	21.98	21.58	17.46	1.41	45.81
9	30.60	9.34	10.33	16.63	16.90	46.30	32.76	80.18	82.61	40.72	20.95	20.95	16.01	1.39	49.29
10	34.39	8.81	9.89	16.74	18.85	45.71	40.46	82.78	84.10	47.87	19.11	19.11	12.67	1.24	55.60
11	29.73	8.37	9.59	14.87	11.73	54.44	46.65	85.86	87.91	58.44	14.73	14.73	10.82	1.27	66.48
12	30.35	9.12	9.49	15.12	13.70	53.57	53.10	87.11	88.60	65.05	11.83	11.83	9.99	1.32	73.39
13	29.37	8.36	9.36	15.48	13.89	53.21	48.75	86.04	87.44	60.84	13.40	13.40	11.01	1.35	69.42
14	28.95	9.06	9.53	16.04	13.94	51.44	39.74	83.43	85.45	50.19	17.63	17.63	13.34	1.21	56.73
15	29.44	10.54	10.32	17.73	15.98	45.39	25.62	78.21	80.68	39.01	20.83	20.83	18.05	1.27	48.36

NR.	C2/C4 OLEF.	ZUSAMMENSETZUNG DES FT - PRODUKTES MASSEN - % CH4	C2H4	C2H6	C3H6	C3H8	C4H8	C4H10	C5+	ZUSAMMENSETZUNG DER C2/C4-OLEFINE % C2H4	% C3H6	% C4H8	AUSBEUTEN G/NM3(IG) C2/4-C	C1+
1	23.71	9.65	4.59	4.23	13.55	2.16	5.17	1.89	58.37	21.03	44.45	35.48	32.6	137.5
2	24.49	10.42	4.53	5.36	11.09	2.44	8.87	1.97	55.31	18.51	45.26	36.23	33.8	137.9
3	24.23	12.93	2.31	8.17	12.38	4.24	13.36	3.86	42.61	9.97	43.06	46.17	40.8	143.8
4	27.99	12.06	2.85	7.73	12.24	3.99	12.90	3.83	44.40	10.18	43.74	46.08	40.2	143.7
5	27.68	12.16	2.82	7.83	12.23	4.04	12.64	3.78	44.50	10.17	44.19	45.64	39.6	143.1
6	27.68	8.77	4.95	4.58	11.74	2.10	10.99	1.86	55.02	17.88	42.42	39.70	44.1	159.2
7	29.64	9.39	4.05	6.14	12.97	2.80	12.67	2.20	50.13	13.51	43.74	42.75	45.2	165.8
8	29.10	11.65	2.92	9.10	13.71	3.77	13.17	3.17	44.22	10.04	44.70	45.26	49.8	167.7
9	29.96	13.49	3.31	7.27	13.32	3.37	13.63	2.97	45.44	11.03	45.47	45.50	53.0	166.8
10	33.37	9.19	3.91	6.17	13.57	2.96	15.99	2.66	44.95	11.73	40.66	47.61	54.8	164.2
11	28.17	9.06	4.39	5.30	12.53	2.16	11.25	1.60	53.62	15.59	44.48	39.93	48.3	171.6
12	29.32	9.12	4.55	4.64	12.94	2.01	11.93	1.59	52.79	16.60	43.40	40.01	44.4	149.1
13	29.41	9.39	4.49	5.04	13.07	2.22	11.87	1.73	52.21	15.22	44.43	40.35	40.1	136.5
14	28.34	10.14	3.57	6.17	13.10	2.73	11.66	2.06	50.57	12.62	46.22	41.15	43.9	154.8
15	23.59	11.75	2.58	8.02	13.55	3.96	12.56	3.12	44.48	8.58	47.23	43.78	41.4	144.3

Table 43 Influence of the reaction parameters

1 rising parameter value
2 CO/H_2 ratio
3 pressure
4 space velocity
5 catalyst age
6 desired
7 average C number in the molecule
8 ethylene content of the C_2 fraction
9 ethylene content of the C_2/C_4 olefins
10 C_2/C_4 olefin content of the product palette
11 butene-1 content of the butenes
12 synthesis gas conversion
13 C_2/C_4 olefin yield
14 meanings: + rising, 0 constant, - falling

ansteigender Parameterwert 1	CO/H₂-Verh. 2	Temp.	Druck 3	Raum-geschw. 4	Katal.-alter 5	er-wünscht 6
mittlere C-Zahl im Molekül 7	+	−	+	−	−	−
Äthylengehalt der C_2-Fraktion 8	+	−	O	+	−	+
Äthylengehalt der C_2/C_4-Olefine 9	+	−	O	+	O	+
C_2/C_4-Olefingehalt der Produktpalette 10	−	O	−	+	−	+
Buten-1-Gehalt der Butene 11	+	−	O	+	−	+
Synthesegas-umsatz 12	+	+	+	−	−	+
C_2/C_4-Olefin-ausbeute 13	+	+	−	−	−	+

Es bedeuten: + ansteigend, O konstant, − abfallend 14

Table 44 Comparison of catalysts

1	catalyst type
2	iron precipitation catalyst
3	Sasol catalyst 1
4	iron whisker catalyst
5	Ruhrchemie catalyst LP 8/78
6	Mn-Fe catalyst 2
7	Berlin
8	Bergkamen
9	liquid phase reactor
10	fixed-bed reactor
11	temperature
12	pressure
13	space velocity
14	CO/H_2 ratio
15	circulation ratio
16	ideal gas conversion in percent of the charge
17	selectivity in percent of C_{1+}
18	olefin contents in percent
19	C_2 fraction
20	C_3 fraction
21	C_4 fraction
22	butene-1 content in percent of the butenes
23	composition of the C_2/C_4 olefins in percent
24	$C_2/C4$ yield in g per $m^3(V_n)$
25	relative to actual conversion
26	relative to 80 percent conversion

Tab. 44 Katalysatorenvergleich

Katalysatorart 1	Eisenfällungs-katalysator 2		Sasol-Kat. 1 3	Eisen-Whisker-Katalysator 4		Ruhrchemie-Kat. LP 8/78 5		Mn-Fe-Katalys. 2 6 (Berlin) 7	Mn-Fe-Katalys. 2 6 (Bergk.) 8
Flüssigphasereaktor 9	x		x	x		x		x	
Festbettreaktor 10		x			x		x		x
Temperatur in °C 11	288	300	315	323	312	372	340	316	310
Druck in bar 12	11	11	16	11	11	21	11	11	11
Raumgeschwindigkeit in h^{-1} 13	320	347	360	204	312	152	114	332	222
CO/H_2-Verhältnis 14	1,4	1,0	0,45	1,0	0,6	0,92	0,98	1,25	0,94
Kreislaufverhältnis 15	0	0	1,2	6	0	0	0	0	0
Idealgasumsatz in % vom 16 Einsatz	58	76	67	74	69	54	73	50	78
Selektivität in % vom C_{1+} 17									
C_1	10	13	14	7	7	24	16	13	13
$C_{2/4}$-Olefine	25	20	35	32	35	39	39	41	39
$C_{2/4}$-Paraffine	13	15	9	5	5	17	15	10	14
C_{5+}	52	52	44	56	53	20	30	36	34
Olefingehalte in % 18									
C_2-Fraktion 19	27	21	68	80	86	57	41	55	39
C_3-Fraktion 20	80	68	84	91	91	81	81	85	82
C_4-Fraktion 21	81	71	84	90	90	80	82	69	86
Buten-1-Gehalt in % 22 der Butene	60	57	93	93	93	68	52	65	63
Zusammensetzung der 23 C_2/C_4-Olefine in %									
C_2H_4	11	9	26	23	26	34	15	16	12
C_3H_6	47	47	40	39	38	43	46	40	42
C_4H_8	42	44	34	38	36	24	39	44	46
C_2/C_4-Olefin-Ausbeute in 24 g pro m^3 (V_n)									
bezogen auf Ist-Umsatz 25	29	30	43	48	49	40	55	40	60
bezogen auf Umsatz 80 % 26	39	32	52	52	57	59	60	64	62