

Table 1. Major Events in Run SB-0946 with 100 Fe/3 Cu/4 K/16 SiO₂ Catalyst (batch 4)

TOS (h)	Event
	Slurry loading: 306 g of Durasyn 164 oil, 15 g of catalyst (particle size < 270 mesh)
	Catalyst pretreatment: CO, 280°C, 0.78 MPa for 8 h
	Slurry sample withdrawal: 13.6 g slurry, 0.6 g catalyst
	Wax withdrawal through filter: 34 g of wax
0	Initiate synthesis gas flow, achieve process conditions: T = 260°C, P = 2.34 MPa, SV = 2.34 NI/g-cat/h, (H ₂ /CO) = 0.67
113	Slurry sample withdrawal: 14 g slurry, 0.7 g catalyst
133	Change process conditions: SV = 1.8 NI/g-cat/h
229	Slurry sample withdrawal: 15 g slurry, 0.7 g catalyst
230	Change process conditions: P = 2.17 MPa, SV = 2.64 NI/g-cat/h
354	Slurry sample withdrawal: 15.9 g slurry, 0.6 g catalyst
427	Slurry sample withdrawal: 16.6 g slurry, 0.6 g catalyst
443	Change process conditions: SV = 2.0 NI/g-cat/h, feed (H ₂ /CO) = 0.6
562	Slurry sample withdrawal: 26.6 g slurry, 1 g catalyst
563	End of run: 587 g slurry recovered from the reactor
	Wax and catalyst removed during the run: 1036 g wax, 3.6 g catalyst

Table 2. Major Events in Run SB-1626 with 100 Fe/3 Cu/4 K/16 SiO₂ Catalyst (batch 4)

TOS (h)	Event
	Slurry loading: 323 g of Durasyn 164 oil, 15 g of catalyst (particle size < 270 mesh)
	Catalyst pretreatment: syngas H ₂ /CO=0.67, 280°C, 0.78 MPa for 8 h
	Slurry sample withdrawal: 14.2 g slurry, 0.6 g catalyst
	Wax withdrawal through filter: 26 g of wax
0	Initiate synthesis gas flow, achieve process conditions: T = 260°C, P = 2.34 MPa, SV = 2.34 NI/g-cat/h, feed (H ₂ /CO) = 0.67
139	Slurry sample withdrawal: 14.4 g slurry, 0.6 g catalyst
141	Change process conditions: SV = 1.8 NI/g-cat/h
258	Slurry sample withdrawal: 15.5 g slurry, 0.6 g catalyst
261	Change process conditions: P = 2.17 MPa, SV = 2.64 NI/g-cat/h
403	Slurry sample withdrawal: 15.9 g slurry, 0.6 g catalyst
403	End of run: 301 g slurry recovered from the reactor
	Wax and catalyst removed during the run: 606 g wax, 2.4 g catalyst

Table 3. Major Events in Run SB-1276 with 100 Fe/5 Cu/6 K/24 SiO₂ Catalyst (batch 3)

TOS (h)	Event
	Slurry loading: 309 g of Durasyn 164 oil, 14 g of catalyst (particle size < 270 mesh)
	Catalyst pretreatment: H ₂ , 250°C, 0.78 MPa for 4 h
	Slurry sample withdrawal: 13.3 g slurry, 0.6 g catalyst
	Wax withdrawal through filter: 19.5 g of wax
0	Initiate synthesis gas flow, achieve process conditions: T = 260°C, P = 1.48 MPa, SV = 2.15 NI/g-cat/h, (H ₂ /CO) = 0.67
48	Change process conditions: SV = 1.8 NI/g-cat/h
138	Slurry sample withdrawal: 13 g slurry, 0.6 g catalyst
188	Change process conditions: P = 2.17 MPa
239	Slurry sample withdrawal: 14.6 g slurry, 0.7 g catalyst
311	Slurry sample withdrawal: 13.3 g slurry, 0.6 g catalyst
312	Change process conditions: SV = 1.2 NI/g-cat/h
383	Slurry sample withdrawal: 26.9 g slurry, 1.1 g catalyst
384	End of run: 295 g slurry recovered from the reactor
	Wax and catalyst removed during the run: 178 g wax, 3.6 g catalyst

Table 4. Comparison of BET Surface Area of Promoted Iron Catalysts.

Catalyst Sample	BET Surface Area*, m ² /g		Degree of Reduction (%)
	Before Reduction	After Reduction	
100 Fe/3.0 Cu	271	25	19
100 Fe/0.2 K	203	17	12
100 Fe/0.5 K	218	14	10
100 Fe/3.0 Cu/4.0 K/16 SiO ₂ (batch-4)	310	111	23
100 Fe/5.0 Cu/6.0 K/24 SiO ₂ (batch-5)	285	156	21

* BET surface areas of reduced and unreduced samples are based on single- point method.

Reduction conditions: 5%H₂/95%N₂, Flow Rate = 40 ml/min, Ramping = 5°C/min, Temperature = 280°C for 8 h.

Table 5. Summary of TPR Results for Catalysts B and C from Different Batches.

Catalyst Sample	Peak Positions (°C)		Degree of Reduction (%)	
	First Stage	Second Stage	Based on 1st Stage	Total
100 Fe/3.0 Cu/4.0 K/16 SiO ₂ , S3416-2	320	585	25	87
100 Fe/3.0 Cu/4.0 K/16 SiO ₂ , S3416-2+K(2)	302	538	23	79
100 Fe/3.0 Cu/4.0 K/16 SiO ₂ , S3416-3+2(2)	306	530	23	97
100 Fe/3.0 Cu/4.0 K/16 SiO ₂ , S3416-4	326	576	26	84
100 Fe/5.0 Cu/6.0 K/16 SiO ₂ , S5624-2	310	578	23	98
100 Fe/5.0 Cu/6.0 K/16 SiO ₂ , S5624-3	300	580	24	88
100 Fe/5.0 Cu/6.0 K/16 SiO ₂ , S5624-4	302	570	23	96
100 Fe/5.0 Cu/6.0 K/16 SiO ₂ , S5624-5	313	570	27	89

* Reducing Gas = 5% H₂/95% N₂, Reduction Temperature = Room Temperature to 800°C, Ramping = 20°C/min, Catalyst Weight = ~20 mg and Flow Rate = 40 ml/min.