Use of Yield Charts

		Vol%		Wt%		Density	
Fuel Gas				Fig 6.19			
LPG	C3	Fig 6.20	Fig 6.21		Ratio		Pure
	C3=		Fig 6.21		Ratio		Pure
	IC4		Fig 6.22		Ratio		Pure
	NC4		Fig 6.22		Ratio		Pure
	C4=s		Fig 6.22		Ratio		Pure
Gasoline		Fig 6.23		Ratio		Fig 6.27	
Cycle Oils	LCO	100% - Conv	Δ	Δ	Δ	Ratio	Ratio
	HCO		Fig 6.24 & 6.25		Ratio		Fig 6.27
Coke				Fig 6.18			
Total				100%	100%		

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000		100.0%	#DIV/0!	25.0			12.00	0.50		
Light gases (C2-)											
Propane (C3)											
Propylene (C3=)											
Iso-butane (IC4)											
n-butane (NC4)											
Butylenes (C4=)											
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke											
Total	0	0	0.00%	0.00%							
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!				
Total LPG	0	0		0.00%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	0.00%	

Initialize with the operating data & known values for the feed

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000		100.0%	#DIV/0!	25.0	0.9042	7.538	12.00	0.50	0	
Light gases (C2-)											
Propane (C3)					147.6	0.5070	4.227				
Propylene (C3=)					140.1	0.5210	4.344				
Iso-butane (IC4)					119.9	0.5629	4.693				
n-butane (NC4)					110.8	0.5840	4.869				
Butylenes (C4=)					103.8	0.6013	5.013				
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke											
Total	0	0	0.00%	0.00%							
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!				
Total LPG	0	0		0.00%							

Total	0.00%	

Initialize values from relationships to given data & known pure component data

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)											
Propane (C3)					147.6	0.5070	4.227				
Propylene (C3=)					140.1	0.5210	4.344				
Iso-butane (IC4)					119.9	0.5629	4.693				
n-butane (NC4)					110.8	0.5840	4.869				
Butylenes (C4=)					103.8	0.6013	5.013				
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke											
Total	0	0	0.00%	0.00%							
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!				
Total LPG	0	0		0.00%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	0.00%	

Determine mass feed rate from volumetric feed rate

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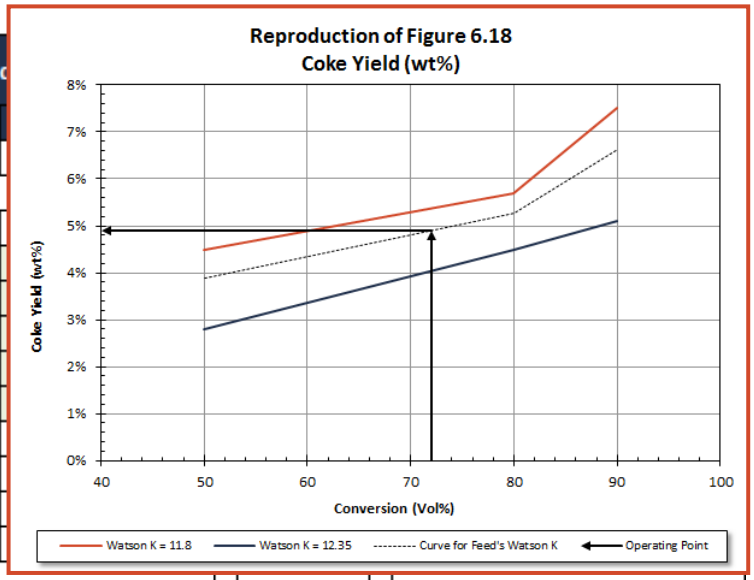
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Stand °API
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0
Light gases (C2-)					
Propane (C3)					147.6
Propylene (C3=)					140.1
Iso-butane (IC4)					119.9
n-butane (NC4)					110.8
Butylenes (C4=)					103.8
Gasoline (C5+)					
Light Cycle Oil (LCO)					
Heavy Cycle Oil (HCO)					
Coke		387,452		4.90%	
Total	0	387,452	0.00%	4.90%	
Cycle Oils	0	0	0.00%	0.00%	#DIV/0! #DIV/0! #DIV/0!
Total LPG	5,880	0	23.52%	0.00%	



	Yields [vol%] Unnormalized	Normalized
Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	0.00%	

Determine coke yield using Fig 6.18. Interpolate between the curves using the feed's Watson K.

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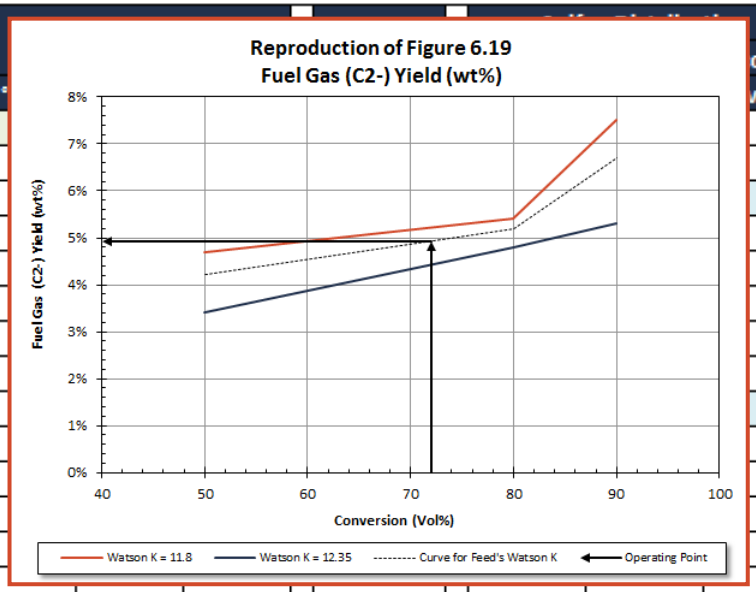
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%
Light gases (C2-)		389,994		4.93%
Propane (C3)				
Propylene (C3=)				
Iso-butane (IC4)				
n-butane (NC4)				
Butylenes (C4=)				
Gasoline (C5+)				
Light Cycle Oil (LCO)				
Heavy Cycle Oil (HCO)				
Coke		387,452		4.90%
Total	0	777,446	0.00%	9.82%
Cycle Oils	0	0	0.00%	0.00%
Total LPG	0	0		0.00%



	Yields [vol%] Unnormalized	Normalized
Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	0.00%	

Determine light gas (C2-) yield using Fig 6.19

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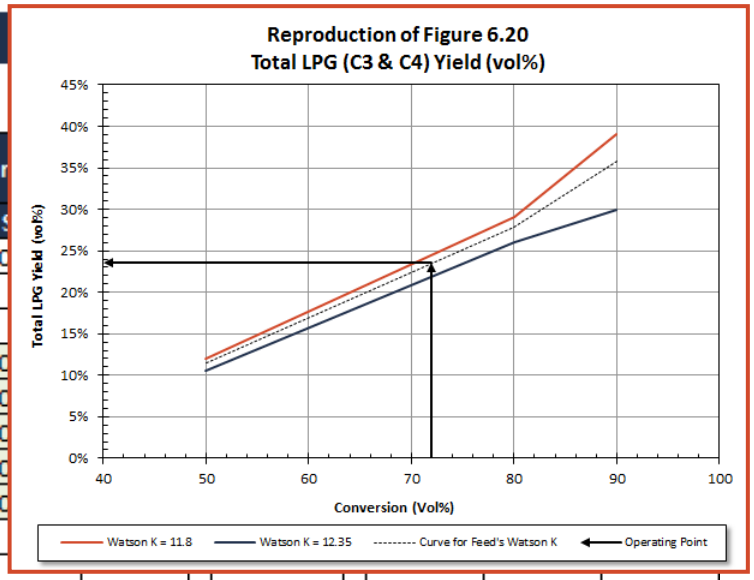
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Standar °API	S
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0
Light gases (C2-)		389,994		4.93%		
Propane (C3)					147.6	0
Propylene (C3=)					140.1	0
Iso-butane (IC4)					119.9	0
n-butane (NC4)					110.8	0
Butylenes (C4=)					103.8	0
Gasoline (C5+)						
Light Cycle Oil (LCO)						
Heavy Cycle Oil (HCO)						
Coke		387,452		4.90%		
Total	0	777,446	0.00%	9.82%		
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!
Total LPG	5,880	0	23.52%	0.00%		



	Yields [vol%] Unnormalized	Normalized
Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	0.00%	23.52%

Determine the total volumetric yield of LPG yield from Fig 6-20.

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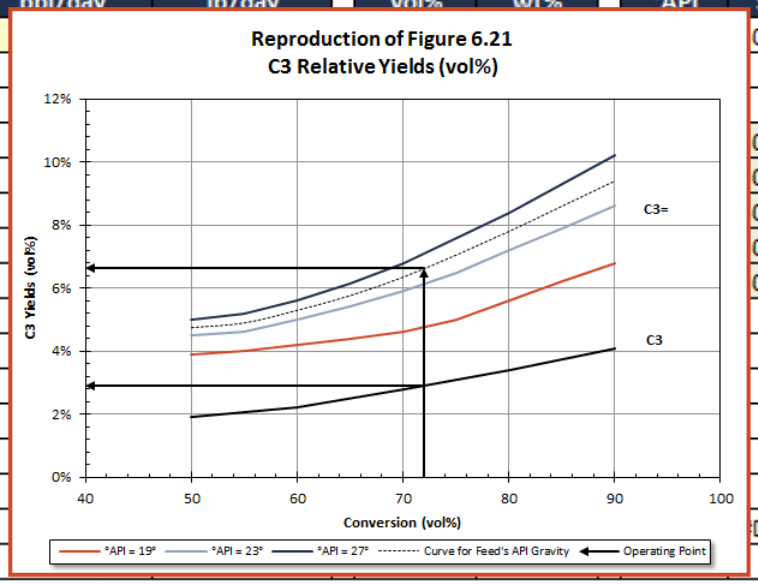
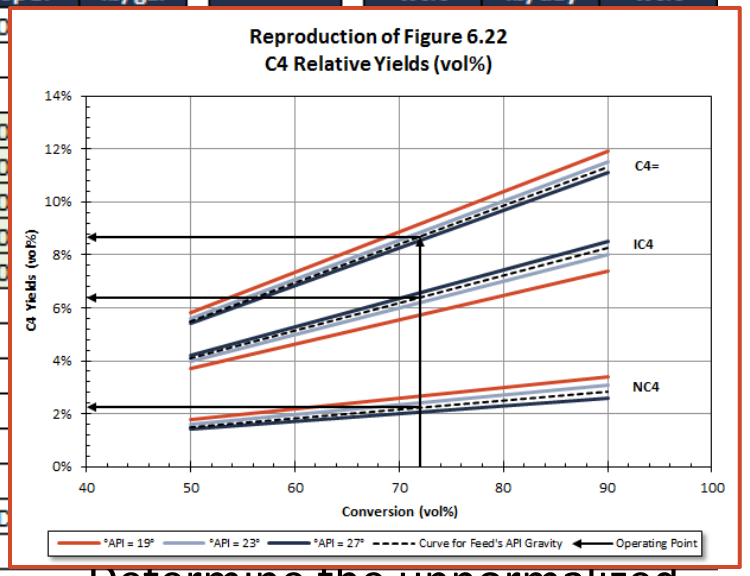
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Standard Densities °API	Standard Densities SpGr	Standard Densities lb/gal	Watson K Factor	Sulfur Distribution Content wt%	Sulfur Distribution Content lb/day	Sulfur Distribution Recovery wt%
FCCU Feed (Total Gas Oil)											
Light gases (C2-)											
Propane (C3)											
Propylene (C3=)											
Iso-butane (IC4)											
n-butane (NC4)											
Butylenes (C4=)											
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke											
Total											
Cycle Oils											
Total LPG											





	Yields [vol%] Unnormalized	Yields [vol%] Normalized
Propane (C3)	2.92%	
Propylene (C3=)	6.63%	
Iso-butane (IC4)	6.38%	
n-butane (NC4)	2.24%	
Butylenes (C4=)	8.69%	
Total	26.87%	25.32%

Determine the unnormalized individual yields from Figs 6-21 & 2-22. Interpolate between the curves using the feed's API gravity.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							
Propane (C3)	639		2.56%		147.6	0.5070	4.227				
Propylene (C3=)	1,451		5.80%		140.1	0.5210	4.344				
Iso-butane (IC4)	1,397		5.59%		119.9	0.5629	4.693				
n-butane (NC4)	491		1.96%		110.8	0.5840	4.869				
Butylenes (C4=)	1,902		7.61%		103.8	0.6013	5.013				
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke		387,452		4.90%							
Total	5,880	777,446	23.52%	9.82%							
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!				
Total LPG	5,880	0	23.52%	0.00%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Normalize the individual yields to match Fig 6-20's total yield. Calculate the individual bpd yields.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227				
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344				
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693				
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869				
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013				
Gasoline (C5+)											
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)											
Coke		387,452		4.90%							
Total	5,880	1,931,892	23.52%	24.41%							
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!				
Total LPG	5,880	1,154,446	23.52%	14.59%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Calculate mass LPG yields using the standard liquid density data for the pure components

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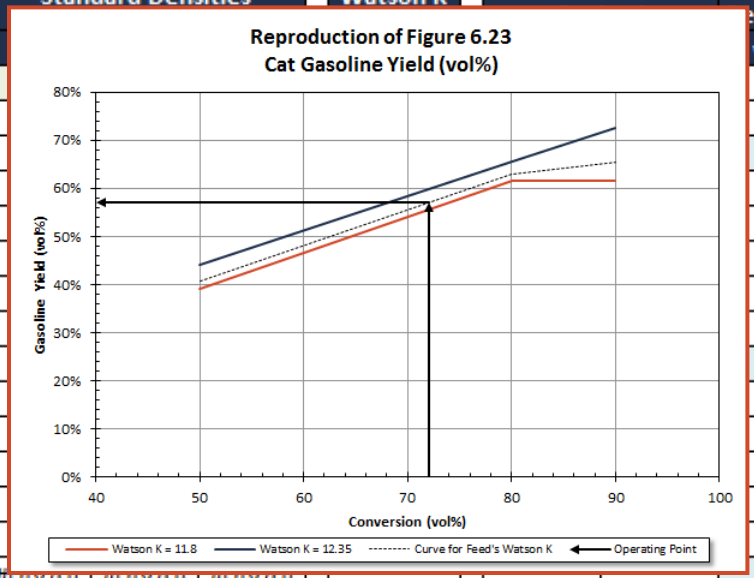
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%
Light gases (C2-)		389,994		4.93%
Propane (C3)	639	113,468	2.56%	1.43%
Propylene (C3=)	1,451	264,749	5.80%	3.34%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%
n-butane (NC4)	491	100,375	1.96%	1.27%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%
Gasoline (C5+)	14,263		57.05%	
Light Cycle Oil (LCO)				
Heavy Cycle Oil (HCO)				
Coke		387,452		4.90%
Total	20,143	1,931,892	80.57%	24.41%
Cycle Oils	0	0	0.00%	0.00%
Total LPG	5,880	1,154,446	23.52%	14.59%

Standard Densities | Watson K | Sulfur Distribution



	Yields [vol%] Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Determine gasoline volumetric yield using Fig. 6.23.

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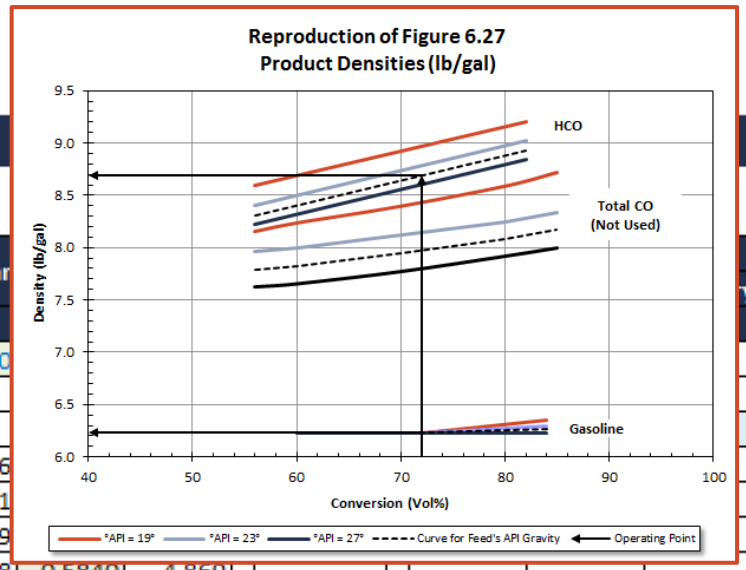
FCCU Yield Example



Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Star °API			
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0			
Light gases (C2-)		389,994		4.93%				
Propane (C3)	639	113,468	2.56%	1.43%	147.6			
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1			
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9			
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869	
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013	
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230	
Light Cycle Oil (LCO)								
Heavy Cycle Oil (HCO)								
Coke		387,452		4.90%				
Total	20,143	5,663,917	80.57%	71.56%				
Cycle Oils	0	0	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	
Total LPG	5,880	1,154,446	23.52%	14.59%				

Determine gravity of gasoline from Fig 6.27 & convert volumes to weight basis

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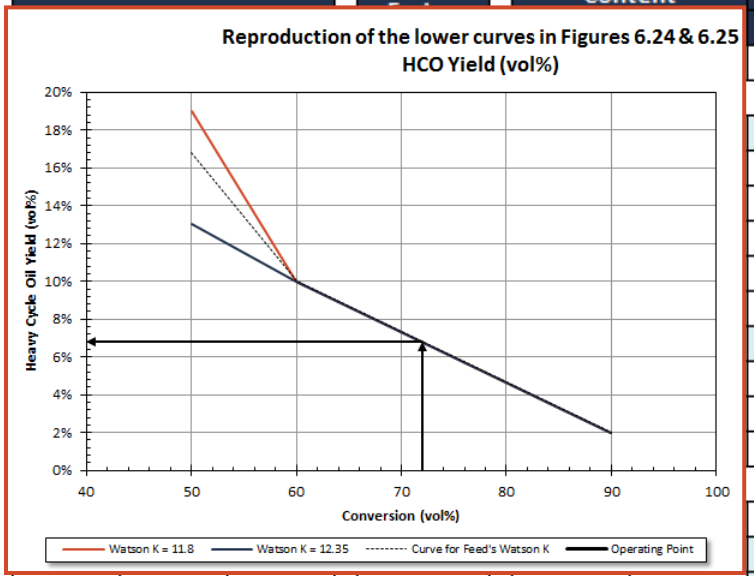
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Standard Densities	Watson K	Sulfur Distribution Content	Sulfur Distribution Recovery wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%				
Light gases (C2-)		389,994		4.93%				
Propane (C3)	639	113,468	2.56%	1.43%				
Propylene (C3=)	1,451	264,749	5.80%	3.34%				
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%				
n-butane (NC4)	491	100,375	1.96%	1.27%				
Butylenes (C4=)	1,902	400,492	7.61%	5.06%				
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%				
Light Cycle Oil (LCO)								
Heavy Cycle Oil (HCO)	1,700		6.80%					
Coke		387,452		4.90%				
Total	21,843	5,663,917	87.37%	71.56%				
Cycle Oils	1,700	0	6.80%	0.00%				
Total LPG	5,880	1,154,446	23.52%	14.59%				



	Yields [vol%] Unnormalized	Yields [vol%] Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Determine HCO volumetric yield using Fig 6.24

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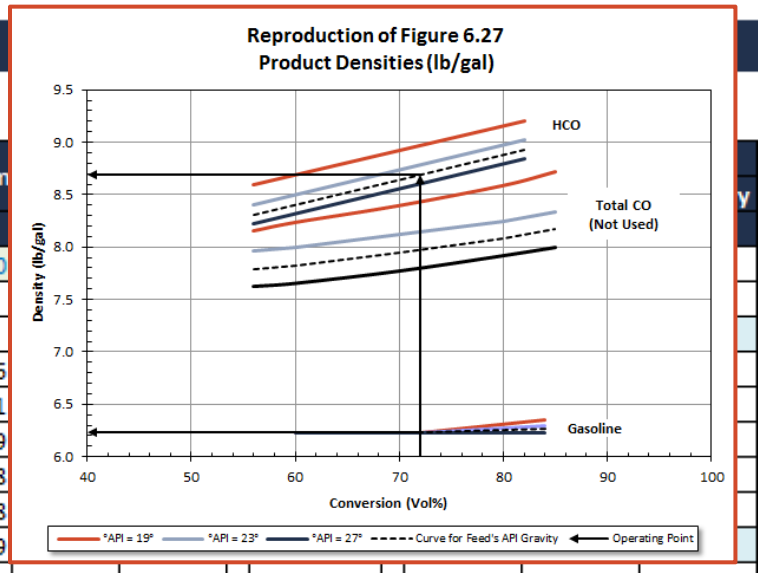
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Stan °API						
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0						
Light gases (C2-)		389,994		4.93%							
Propane (C3)	639	113,468	2.56%	1.43%	147.6						
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1						
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9						
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8						
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8						
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9						
Light Cycle Oil (LCO)											
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				
Coke		387,452		4.90%							
Total	21,843	6,284,493	87.37%	79.40%							
Cycle Oils	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				
Total LPG	5,880	1,154,446	23.52%	14.59%							



	Yields [vol%] Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Determine gravity of HCO using Fig 6-27 & determine the mass yield (wt% & lb/hr)

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227				
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344				
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693				
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869				
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013				
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230				
Light Cycle Oil (LCO)	5,300		21.20%								
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				
Coke		387,452		4.90%							
Total	27,143	6,284,493	108.57%	79.40%							
Cycle Oils	7,000	620,576	28.00%	7.84%	427.4	0.2532	2.111				
Total LPG	5,880	1,154,446	23.52%	14.59%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Calculate the LCO volumetric yield based on the definition of conversion.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227				
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344				
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693				
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869				
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013				
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230				
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%							
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				
Coke		387,452		4.90%							
Total	27,143	7,915,013	108.57%	100.00%							
Cycle Oils	7,000	2,251,096	28.00%	28.44%	427.4	0.2532	2.111				
Total LPG	5,880	1,154,446	23.52%	14.59%							

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Calculate the LCO weight yield based on difference from 100% total weight yield.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction	bbl/day	lb/day	Yields vol%	Yields wt%	Standard Densities °API	Standard Densities SpGr	Standard Densities lb/gal	Watson K Factor	Sulfur Distribution Content wt%	Sulfur Distribution Content lb/day	Sulfur Distribution Recovery wt%
		5,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
		9,994		4.93%							
		3,468	2.56%	1.43%	147.6	0.5070	4.227				
		4,749	5.80%	3.34%	140.1	0.5210	4.344				
		5,362	5.59%	3.48%	119.9	0.5629	4.693				
		0,375	1.96%	1.27%	110.8	0.5840	4.869				
Butylenes (C4=)	1,502	480,492	7.61%	5.06%	103.8	0.6013	5.013				
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230				
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325				
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				
Coke		387,452		4.90%							
Total	27,143	7,915,013	108.57%	100.00%							
Cycle Oils	7,000	2,251,096	28.00%	28.44%	22.6	0.9184	7.657				
Total LPG	5,880	1,154,446	23.52%	14.59%							

Estimate the densities of the LCO & Total CO based upon the weights & volumes produced.

	Yields [vol%] Unnormalized	Yields [vol%] Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

Updated: July 5, 2017

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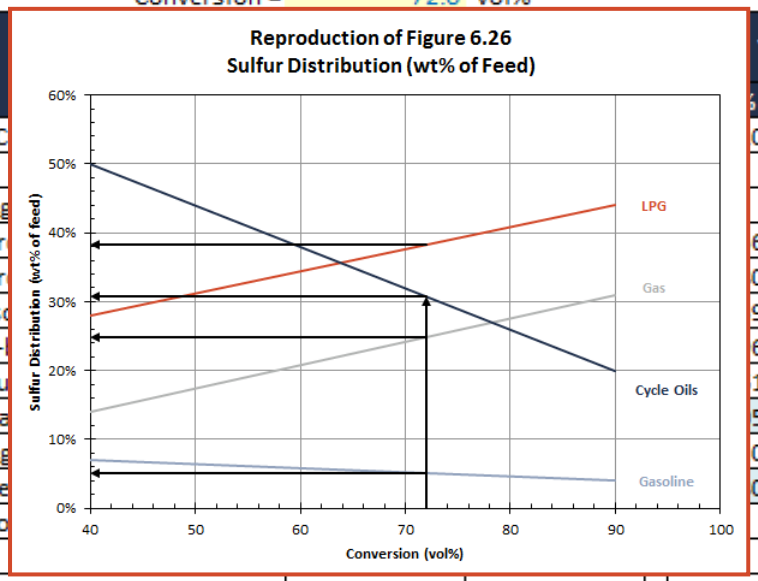
FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%



	Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
							Content		Recovery
	%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FC	0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Lig		4.93%							24.9%
Pr	6%	1.43%	147.6	0.5070	4.227				
Pr	0%	3.34%	140.1	0.5210	4.344				
Iso	9%	3.48%	119.9	0.5629	4.693				
n-l	6%	1.27%	110.8	0.5840	4.869				
Bu	1%	5.06%	103.8	0.6013	5.013				
Ga	5%	47.15%	57.9	0.7473	6.230				5.1%
Lig	0%	20.60%	29.6	0.8786	7.325				
He	0%	7.84%	4.2	1.0425	8.692				
Co		4.90%							
Total	27.143	7.915.013	108.57%	100.00%					30.0%
			28.00%	28.44%	22.6	0.9184	7.657		30.8%
			23.52%	14.59%					38.2%

Estimate the split of sulfur based on Fig 6.26

Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							24.9%
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227				7.6%
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344				7.6%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693				7.6%
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869				7.6%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013				7.6%
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230				5.1%
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325				15.4%
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				15.4%
Coke		387,452		4.90%							
Total	27,143	7,915,013	108.57%	100.00%							99.0%
			28.00%	28.44%	22.6	0.9184	7.657				30.8%
			23.52%	14.59%							38.2%

Estimate the recoveries of the sub-fractions from the numbers for the overall fractions (Total LPG & Cycle Oils)

		6%
		0%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%							24.9%
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227				7.6%
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344				7.6%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693				7.6%
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869				7.6%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013				7.6%
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230				5.1%
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325				15.4%
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692				15.4%
Coke		387,452		4.90%							1.0%
Total	27,143	7,915,013	108.57%	100.00%							100.0%
Cycle Oils	7,000	2,251,096	28.00%	28.44%	22.6	0.9184	7.657				30.8%
Total LPG	5,880	1,154,446	23.52%	14.59%							38.2%

	Unnorma
Propane (C3)	2
Propylene (C3=)	6
Iso-butane (IC4)	6
n-butane (NC4)	2
Butylenes (C4=)	8
Total	26.87%

Determine amount of sulfur to coke by difference.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%						9,846	24.9%
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227			3,027	7.6%
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344			3,027	7.6%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693			3,027	7.6%
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869			3,027	7.6%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013			3,027	7.6%
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230			2,010	5.1%
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325			6,095	15.4%
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692			6,095	15.4%
Coke		387,452		4.90%						396	1.0%
Total	27,143	7,915,013	108.57%	100.00%						39,575	100.0%
Cycle Oils	7,000	2,251,096	28.00%	28.44%	22.6	0.9184	7.657			12,189	30.8%
Total LPG	5,880	1,154,446	23.52%	14.59%						15,134	38.2%

Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	26.87%	23.52%

Determine the mass of sulfur in each fraction based on the wt% recovery in each fraction.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%					2.5%	9,846	24.9%
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227		2.7%	3,027	7.6%
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344		1.1%	3,027	7.6%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693		1.1%	3,027	7.6%
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869		3.0%	3,027	7.6%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013		0.8%	3,027	7.6%
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230		0.1%	2,010	5.1%
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325		0.4%	6,095	15.4%
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692		1.0%	6,095	15.4%
Coke		387,452		4.90%					0.1%	396	1.0%
Total	27,143	7,915,013	108.57%	100.00%						39,575	100.0%
Cycle Oils	7,000	2,251,096	28.00%	28.44%	22.6	0.9184	7.657			12,189	30.8%
Total LPG	5,880	1,154,446	23.52%	14.59%						15,134	38.2%

Propane (C3)		
Propylene (C3=)		
Iso-butane (IC4)		
n-butane (NC4)		
Butylenes (C4=)		
Total	26.87%	23.52%

Calculate the sulfur content of the products as wt%.

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FCCU Yield Example

Product Yields from FCCU

Conversion = 72.0 vol%

Fraction			Yields		Standard Densities			Watson K Factor	Sulfur Distribution		
									Content		Recovery
	bbl/day	lb/day	vol%	wt%	°API	SpGr	lb/gal		wt%	lb/day	wt%
FCCU Feed (Total Gas Oil)	25,000	7,915,013	100.0%	100.0%	25.0	0.9042	7.538	12.00	0.50	39,575	
Light gases (C2-)		389,994		4.93%					2.5%	9,846	24.9%
Propane (C3)	639	113,468	2.56%	1.43%	147.6	0.5070	4.227		2.7%	3,027	7.6%
Propylene (C3=)	1,451	264,749	5.80%	3.34%	140.1	0.5210	4.344		1.1%	3,027	7.6%
Iso-butane (IC4)	1,397	275,362	5.59%	3.48%	119.9	0.5629	4.693		1.1%	3,027	7.6%
n-butane (NC4)	491	100,375	1.96%	1.27%	110.8	0.5840	4.869		3.0%	3,027	7.6%
Butylenes (C4=)	1,902	400,492	7.61%	5.06%	103.8	0.6013	5.013		0.8%	3,027	7.6%
Gasoline (C5+)	14,263	3,732,025	57.05%	47.15%	57.9	0.7473	6.230		0.1%	2,010	5.1%
Light Cycle Oil (LCO)	5,300	1,630,520	21.20%	20.60%	29.6	0.8786	7.325		0.4%	6,095	15.4%
Heavy Cycle Oil (HCO)	1,700	620,576	6.80%	7.84%	4.2	1.0425	8.692		1.0%	6,095	15.4%
Coke		387,452		4.90%					0.1%	396	1.0%
Total	27,143	7,915,013	108.57%	100.00%						39,575	100.0%
Cycle Oils	7,000	2,251,096	28.00%	28.44%	22.6	0.9184	7.657			12,189	30.8%
Total LPG	5,880	1,154,446	23.52%	14.59%						15,134	38.2%

	Yields [vol%]	
	Unnormalized	Normalized
Propane (C3)	2.92%	2.56%
Propylene (C3=)	6.63%	5.80%
Iso-butane (IC4)	6.38%	5.59%
n-butane (NC4)	2.24%	1.96%
Butylenes (C4=)	8.69%	7.61%
Total	26.87%	23.52%

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