

# Use of Yield Charts & Equations

	Volume	Mass	Density	Ave BPT	Watson K
Hydrogen					
For cracking		$\Delta$			
Sulfur		2 mol/mol S			
Dissolved in product		1 lb/bbl feed			
H <sub>2</sub> S		Sulfur in Feed			
C <sub>3</sub> -		$1.0 + 0.09 \cdot (Y_{LN})$			
IC <sub>4</sub>	$0.377 \cdot (Y_{LN})$	Calculate	Pure		
NC <sub>4</sub>	$0.186 \cdot (Y_{LN})$	Calculate	Pure		
C <sub>5</sub> to 180°F	Fig. 7.3 ( $Y_{LN}$ )	Calculate	Calculate	131°F	Fig. 7.5
180 to 400°F	Fig. 7.4	Calculate	Calculate	281°F	Fig. 7.5
400°F+		$\Delta$	Calculate	460°F	Fig. 7.5

# Hydrocracker Yield Trends

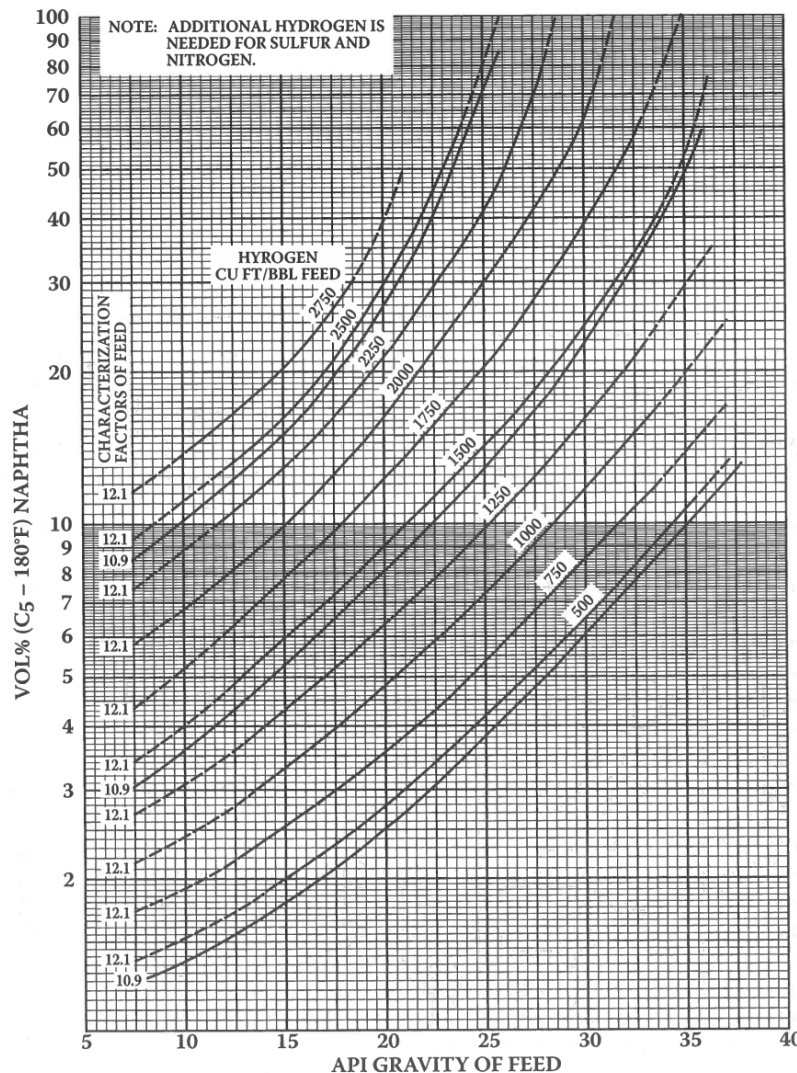


Figure 7.3

- The lighter the feedstock the more readily it cracks
- The curves for the 10.9 Watson K factor feed are about 10% lower than the curves for the 12.1 Watson K factor feed.
  - Suggests the calculation procedure:

$$Y = Y_{K_W=12.1} \left[ 1 - 0.1 \left( \frac{K_W - 12.1}{10.9 - 12.1} \right) \right]$$

Updated: July 5, 2017

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# Hydrocracker Yield Trends

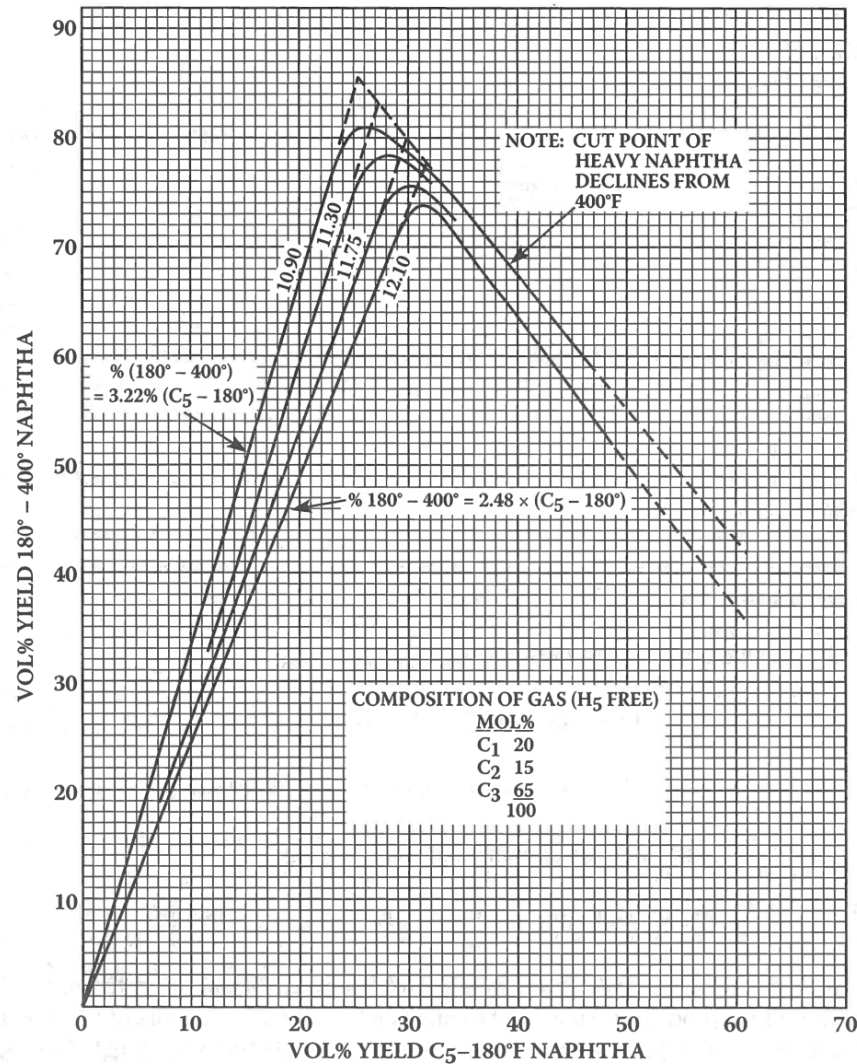


Figure 7.4

- Start over-cracking the heavy naphtha fraction when the light naphtha yields gets above 25 vol%.

Updated: July 5, 2017

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# Hydrocracker Yield – Makeup Hydrogen

Make up hydrogen must be added to compensate for that chemically consumed & any dissolved in the liquid products

- Primary hydrogen consumed will be to saturate aromatics & olefin structures and break C-C bonds
- Additional hydrogen needed for the removal of sulfur
  - Breaking of the C-S-C and C-SH bonds
  - Assume the more conservative 2 mol H<sub>2</sub> per mol S
- Liquid products leave with dissolved H<sub>2</sub>
  - Text book recommends 1 lb H<sub>2</sub> per bbl liquid product

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000			11.65				20.0				0.50%	
Total H2 Required for Reactions		11,067											
<i>Total Reactants</i>		11,067											
<b>Product Distribution:</b>													
H2S													
Methane													
Ethane													
Propane									0.5070				
Iso-butane (IC4)									0.5629				
n-butane (NC4)									0.5840				
C5 to 180°F			131										
180 to 400°F			281										
400 to 520°F			460										
<i>Total Products</i>	0	0			0.00%	0.00%	0.0%						
<i>Light gases (C3-)</i>													
<i>Uncorrected C5 to 180°F</i>													

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	0.0	0			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds					2.0
<i>Chemically Consumed Hydrogen</i>		11,067	2,000.0		
Hydrogen dissolved in products				1.00	
<i>Total Make-Up Hydrogen</i>		11,067	2,000.0		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2	15%	12.4%
C3	65%	78.8%
	100%	100%



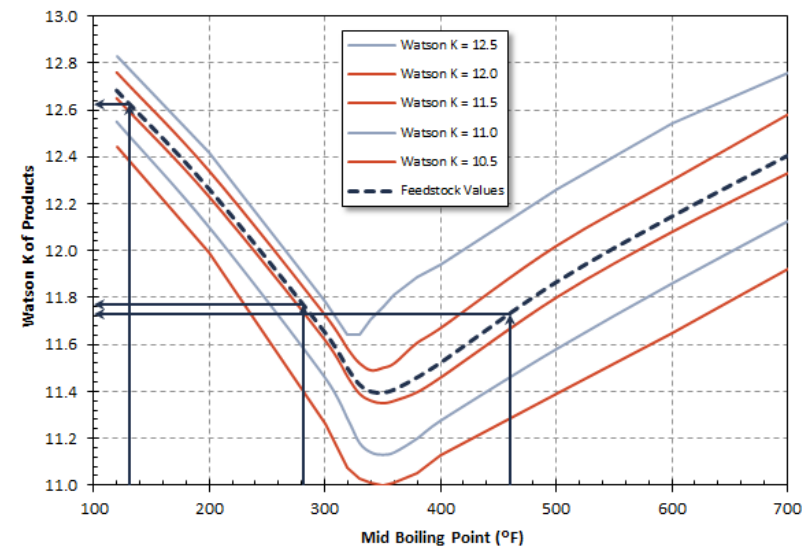
# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000			11.65									
Total H2 Required for Reactions		11,067											
Total Reactants		11,067											
<b>Product Distribution:</b>													
H2S													
Methane													
Ethane													
Propane													
Iso-butane (IC4)													
n-butane (NC4)													
C5 to 180°F			131	12.63									
180 to 400°F			281	11.77									
400 to 520°F			460	11.73									
Total Products	0	0					0.00%						
Light gases (C3-)													
Uncorrected C5 to 180°F													

Estimate the Watson K factors for the liquid products

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	0.0	0			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds					2.0
Chemically Consumed Hydrogen		11,067	2,000.0		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,067	2,000.0		

Reproduction of Figure 7.5  
Characterization of Hydrocracker Products



# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.9%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H <sub>2</sub> Required for Reactions		11,067				3.25%	3.15%						
Total Reactants		351,744				103.2%	100.0%						
<b>Product Distribution:</b>													
H <sub>2</sub> S													
Methane													
Ethane													
Propane								147.6	0.5070	4.227	177.5		
Iso-butane (IC <sub>4</sub> )								119.9	0.5629	4.693	197.1		
n-butane (NC <sub>4</sub> )								110.8	0.5840	4.869	204.5		
C <sub>5</sub> to 180°F			131	12.63				81.4	0.6646	5.541	232.7		
180 to 400°F			281	11.77				52.5	0.7688	6.410	269.2		
400 to 520°F			460	11.73				39.2	0.8292	6.913	290.3		
Total Products	0	0			0.00%	0.00%	0.0%						
Light gases (C <sub>3</sub> -)													
Uncorrected C <sub>5</sub> to 180°F													

	H <sub>2</sub> Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds					2.0
Chemically Consumed Hydrogen		11,067	2,000.0		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,067	2,000.0		

Light Gas Composition		
	mol%	wt%
C <sub>1</sub>	20%	8.8%
C <sub>2</sub>		
C <sub>3</sub>		

Calculate other values based on the physical property information & flow data.

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
Total Reactants		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane													
Ethane													
Propane								147.6	0.5070	4.227	177.5		
Iso-butane (IC4)								119.9	0.5629	4.693	197.1		
n-butane (NC4)								110.8	0.5840	4.869	204.5		
C5 to 180°F			131	12.63				81.4	0.6646	5.541	232.7		
180 to 400°F			281	11.77				52.5	0.7688	6.410	269.2		
400 to 520°F			460	11.73				39.2	0.8292	6.913	290.3		
Total Products	0	1,810				0.00%	0.53%	0.5%					
Light gases (C3-)													
Uncorrected C5 to 180°F													

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,281	2,038.7		

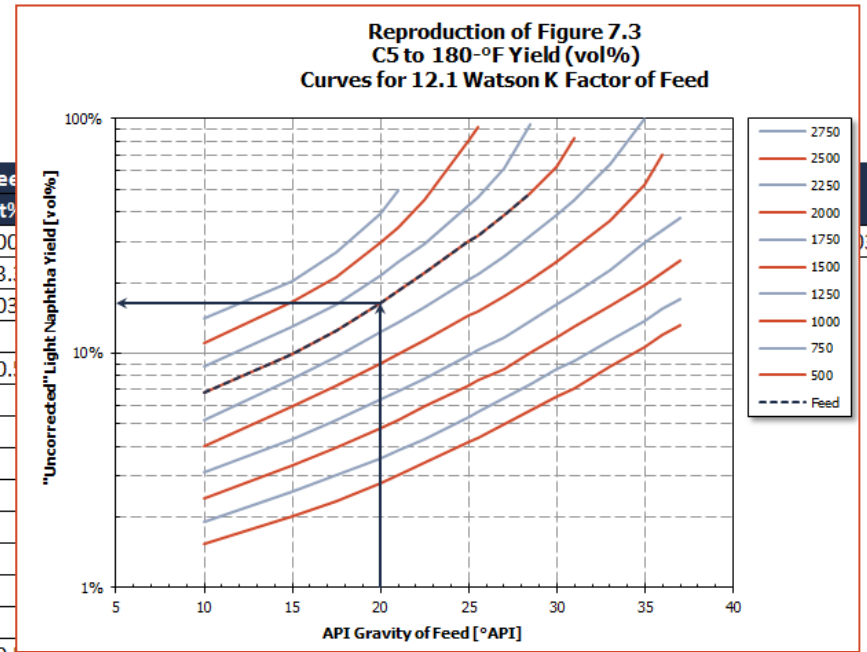
Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine amount H<sub>2</sub>S produced & amount of H<sub>2</sub> required to remove



# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed	
					vol%	wt%
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100%
Total H2 Required for Reactions		11,281				3.1%
Total Reactants		351,958				103.1%
<b>Product Distribution:</b>						
H2S		1,810				0.5%
Methane						
Ethane						
Propane						
Iso-butane (IC4)						
n-butane (NC4)						
C5 to 180°F			131	12.63		
180 to 400°F			281	11.77		
400 to 520°F			460	11.73		
Total Products	0	1,810			0.00%	0.53%
Light gases (C3-)						
Uncorrected C5 to 180°F					16.25%	



	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine Vol% Light Naphtha Yield (based on 12.1 Watson K factor feed).

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
Total Reactants		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane													
Ethane													
Propane								147.6	0.5070	4.227	177.5		
Iso-butane (IC4)								119.9	0.5629	4.693	197.1		
n-butane (NC4)								110.8	0.5840	4.869	204.5		
C5 to 180°F	3,910	37,914	131	12.63	15.64%	11.13%	10.77%	81.4	0.6646	5.541	232.7		
180 to 400°F			281	11.77				52.5	0.7688	6.410	269.2		
400 to 520°F			460	11.73				39.2	0.8292	6.913	290.3		
Total Products	3,910	39,724			15.64%	11.66%	11.3%						
Light gases (C3-)													
Uncorrected C5 to 180°F					16.25%								

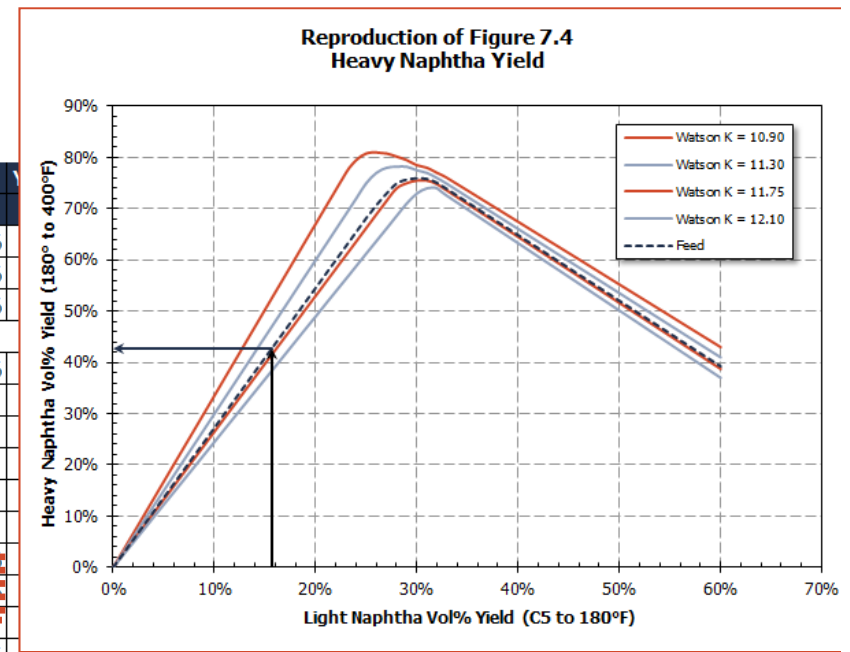
	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Correct to actual Watson K factor of feed. Calculate associated mass values.

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed	
					vol%	wt%
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%
Total H2 Required for Reactions		11,281				3.31%
<i>Total Reactants</i>		351,958				103.3%
<b>Product Distribution:</b>						
H2S		1,810				0.53%
Methane						
Ethane						
Propane						
Iso-butane (IC4)						
n-butane (NC4)						
C5 to 180°F	3,910	37,914	131	12.63	15.64%	11.13%
180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%
400 to 520°F			460	11.73		
<i>Total Products</i>	14,576	159,369			58.30%	46.78%
<i>Light gases (C3-)</i>						
<i>Uncorrected C5 to 180°F</i>					16.25%	



	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
<i>Chemically Consumed Hydrogen</i>		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
<i>Total Make-Up Hydrogen</i>		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine Vol% Heavy Naphtha (180 to 400°F) Yield. Calculate associated mass values.

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
Total Reactants		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane													
Ethane													
Propane								147.6	0.5070	4.227	177.5		
iso-butane (IC4)	1,474	12,107			5.90%	3.55%	3.44%	119.9	0.5629	4.693	197.1		
n-butane (NC4)	727	6,197			2.91%	1.82%	1.76%	110.8	0.5840	4.869	204.5		
C5 to 180°F	3,910	37,914	131	12.63	15.64%	11.13%	10.77%	81.4	0.6646	5.541	232.7		
180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%	33.99%	52.5	0.7688	6.410	269.2		
400 to 520°F			460	11.73				39.2	0.8292	6.913	290.3		
Total Products	16,778	177,672			67.11%	52.15%	50.5%						
Light gases (C3-)													
Uncorrected C5 to 180°F					16.25%								

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine Vol% Butane Yield.  
Calculate associated mass values.

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H <sub>2</sub> Required for Reactions		11,281				3.31%	3.21%						
Total Reactants		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H <sub>2</sub> S		1,810				0.53%	0.51%						
Methane		722				0.21%	0.21%						
Ethane		1,017				0.30%	0.29%						
Propane	874	6,463			3.50%	1.90%	1.84%	147.6	0.5070	4.227	177.5		
Isobutane (IC <sub>4</sub> )	1,474	12,107			5.90%	3.55%	3.44%	119.9	0.5629	4.693	197.1		
n-butane (NC <sub>4</sub> )	727	6,197			2.91%	1.82%	1.76%	110.8	0.5840	4.869	204.5		
C <sub>5</sub> to 180°F	3,910	37,914	131	12.63	15.64%	11.13%	10.77%	81.4	0.6646	5.541	232.7		
180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%	33.99%	52.5	0.7688	6.410	269.2		
400 to 520°F			460	11.73				39.2	0.8292	6.913	290.3		
Total Products	17,651	185,875			70.61%	54.56%	52.8%						
Light gases (C <sub>3</sub> -)		8,202				2.41%	2.33%						
Uncorrected C <sub>5</sub> to 180°F					16.25%								

	H <sub>2</sub> Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
Total Make-Up Hydrogen		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C <sub>1</sub>	20%	8.8%
C <sub>2</sub>		
C <sub>3</sub>		

Determine Wt% C<sub>3</sub> Yield. Split between C<sub>1</sub>, C<sub>2</sub>, & C<sub>3</sub>.



# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
<i>Total Reactants</i>		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane		722				0.21%	0.21%						
Ethane		1,017				0.30%	0.29%						
Propane	874	6,463			3.50%	1.90%	1.84%	147.6	0.5070	4.227	177.5		
Iso-butane (IC4)	1,474	12,107			5.90%	3.55%	3.44%	119.9	0.5629	4.693	197.1		
n-butane (NC4)	727	6,197			2.91%	1.82%	1.76%	110.8	0.5840	4.869	204.5		
C5 to 180°F	3,910	37,914	131	12.63	15.64%	11.13%	10.77%	81.4	0.6646	5.541	232.7		
180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%	33.99%	52.5	0.7688	6.410	269.2		
400 to 520°F		166,083	460	11.73				39.2	0.8292	6.913	290.3		
<i>Total Products</i>	17,651	351,958			70.61%	54.56%	52.8%						
<i>Light gases (C3-)</i>		8,202				2.41%	2.33%						
<i>Uncorrected C5 to 180°F</i>					16.25%								

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
<i>Chemically Consumed Hydrogen</i>		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
<i>Total Make-Up Hydrogen</i>		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine mass amount of Distillate & residual Gas Oil (400°F+) based on total mass balance.



# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
<i>Total Reactants</i>		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane		722				0.21%	0.21%						
Ethane		1,017				0.30%	0.29%						
Propane	874	6,463			3.50%	1.90%	1.84%	147.6	0.5070	4.227	177.5		
Iso-butane (IC4)	1,474	12,107			5.90%	3.55%	3.44%	119.9	0.5629	4.693	197.1		
n-butane (NC4)	727	6,197			2.91%	1.82%	1.76%	110.8	0.5840	4.869	204.5		
C5 to 180°F	3,910	37,914	131	12.63	15.64%	11.13%	10.77%	81.4	0.6646	5.541	232.7		
180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%	33.99%	52.5	0.7688	6.410	269.2		
400 to 520°F	13,729	166,083	460	11.73	54.92%	48.75%	47.19%	39.2	0.8292	6.913	290.3		
<i>Total Products</i>	<i>31,380</i>	<i>351,958</i>			<i>125.52%</i>	<i>103.31%</i>	<i>100.0%</i>						
<i>Light gases (C3-)</i>		8,202				2.41%	2.33%						
<i>Uncorrected C5 to 180°F</i>					16.25%								

	H2 Calculations				
	mol/hr	lb/hr	scf/bbl OIL FEED	lb/bbl PRODUCTS	mol/mol Sulfur
Feed's Sulfur Content	53.1	1,703			
Hydrogen consumed for cracking	5,489.9	11,067	2,000.0		
Hydrogen to break sulfur bonds	106.2	214	38.7		2.0
<i>Chemically Consumed Hydrogen</i>		11,281	2,038.7		
Hydrogen dissolved in products				1.00	
<i>Total Make-Up Hydrogen</i>		11,281	2,038.7		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2		
C3		

Determine all other yield amounts.

# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
Petroleum Feed	25,000	340,676	829	11.65	100.0%	100.0%	96.8%	20.0	0.9340	7.787	327.0	0.50%	1,703
Total H2 Required for Reactions		11,281				3.31%	3.21%						
Total Reactants		351,958				103.3%	100.0%						
<b>Product Distribution:</b>													
H2S		1,810				0.53%	0.51%						
Methane		722				0.21%	0.21%						
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Iso-butane (IC4)	1,474	12,107			5.90%	3.55%	3.44%	119.9	0.5629	4.693	197.1		
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180 to 400°F	10,666	119,645	281	11.77	42.66%	35.12%	33.99%	52.5	0.7688	6.410	269.2		
400 to 520°F	13,729	166,083	460	11.73	54.92%	48.75%	47.19%	39.2	0.8292	6.913	290.3		
Total Products	31,380	351,958			125.52%	103.31%	100.0%						
Light gases (C3-)		8,202				2.41%	2.33%						
Uncorrected C5 to 180°F					16.25%								

	H2 Calculations				
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Chemically Consumed Hydrogen		11,281	2,038.7		
Hydrogen dissolved in products	648.6	1,308	236.3	1.00	
Total Make-Up Hydrogen		12,589	2,275.0		

Light Gas Co		
	m	
C1	2	
C2	1	
C3	6	
	100%	100%

Determine the amount of dissolved H<sub>2</sub> in the liquid products (C<sub>3</sub> & heavier)

Updated: July 5, 2017

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# Hydrocracker Yield Example

Fraction	bbl/day	lb/hr	Ave BPT °F	Watson K	Yields on Oil Feed		Yield on Total wt%	Standard Densities				Sulfur wt%	Sulfur lb/hr
					vol%	wt%		°API	SpGr	lb/gal	lb/bbl		
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<i>Total Products</i>	31,380	351,958			125.52%	103.31%	100.0%						
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<i>Chemically Consumed Hydrogen</i>		11,281	2,038.7		
Hydrogen dissolved in products	648.6	1,308	236.3	1.00	
<i>Total Make-Up Hydrogen</i>		12,589	2,275.0		

Light Gas Composition		
	mol%	wt%
C1	20%	8.8%
C2	15%	12.4%
C3	65%	78.8%
	100%	100%