SK Energy Daily

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SK 증권

1. News Summary (3 page)

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News		Conclusion
WTI comment	수요증가 기대에 강세…WTI 2%↑	
Headline	[주간가격] 에틸렌, WoW 10$/mt 상승해 CFR NEA 1,250$/mt로 마감	동북아 지역 재고 수요와 태국 PE 공장 가동 예정으로 공급 줄며 상승
News 1.	[주간가격] MEG, WoW 3$/mt 하락해 CFR China 900$/mt로 마감	동중국 재고 증가와 최근 늘어난 숏 포지션으로 센티 악화된 모습임
News 2.	[주간가격] BD, WoW 5$/mt 하락해 CFR China 995$/mt로 마감	아시아 역내 BD 수요 감소와 공급 증가로 센티먼트 악화될 전망
News 3.	[주간가격] SBR, WoW 130$/mt 하락해 CFR SEA 1,570$/mt로 마감	원재료인 BD가 12주 최저치를 보이며 약세를 띄자 매수자가 관망중임
News 4.	[주간가격] PX, WoW 33$/mt 상승해 FOB Korea 864.33$/mt로 마감	다운스트림 수요 호조로 일시적 강세였지만 공급 과잉으로 하락 전망

2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
Refinery			%	%	%	%	%
WTI	$/bbl	55.6	2.0	3.2	12.9	12.2	26.3
Dubai	$/bbl	58.9	0.6	3.4	6.6	17.0	37.6
Gasoline	$/bbl	73.8	0.5	2.7	5.3	11.5	25.1
Diesel	$/bbl	70.1	(0.5)	(0.2)	2.2	10.6	23.4
Complex margin	$/bbl	7.7	(0.2)	(0.7)	(0.6)	(0.7)	(2.1)
1M lagging	$/bbl	12.2	0.8	2.9	(0.4)	1.8	8.4
Petrochemical			%	%	%	%	%
Naphtha	$/t	580	1.2	4.7	13.4	23.7	34.7
Butadiene	$/t	945	0.0	(0.5)	(32.5)	3.8	(34.6)
HDPE	$/t	1,240	0.0	0.0	6.4	11.7	6.0
MEG	$/t	900	0.2	(0.3)	1.9	4.3	31.2
PX	$/t	864	1.1	4.0	4.8	5.0	11.8
SM	$/t	1,168	(0.1)	(0.1)	(3.6)	6.2	8.8
Commodity			%	%	%	%	%
Natural Gas	$/mmbtu	2.98	1.7	0.7	(2.0)	(2.6)	(6.2)
Natural rubber	$/t	1,380	(0.7)	(1.4)	(5.5)	(4.8)	(5.5)
Cotton	C/lbs	68.7	(0.5)	0.8	(1.1)	(3.2)	0.3

*참고: 정제마진의 변동률은 %가 아닌 $/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
Petrochemical				%	%	%	%
Ethylene	10/30	$/t	1,130	(3.8)	(10.0)	15.9	13.6
Propylene	10/30	$/t	808	1.6	(3.3)	5.9	17.5
Benzene	10/30	$/t	810	0.9	0.6	9.1	23.7
Toluene	10/30	$/t	690	(0.7)	(1.4)	8.7	4.5
Xylene	10/30	$/t	655	0.4	(0.4)	5.2	0.8
PP	10/30	$/t	1,148	(1.7)	(1.7)	7.0	11.4
PVC	10/30	$/t	890	(2.2)	(6.1)	3.5	(4.3)
ABS	10/30	$/t	1,920	(1.5)	(6.8)	5.5	31.5
SBR	10/30	$/t	1,700	(2.9)	(6.6)	14.1	(10.5)
SM	10/30	$/t	1,210	(0.6)	(10.4)	3.2	14.4
BPA	10/30	$/t	1,685	0.0	8.0	9.4	14.2
Caustic	10/30	$/t	598	8.7	23.6	29.3	63.8
2-EH	10/30	$/t	1,000	0.0	1.0	3.1	26.6
Caprolactam	10/30	$/t	2,170	4.8	18.6	25.4	52.3
Solar				%	%	%	%
Polysilicon	11/01	$/kg	16.7	0.0	0.1	8.7	18.5
Module	11/01	$/W	0.32	(0.3)	(0.9)	(3.1)	(20.2)

3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
E&P			%	%	%	%	%
ExxonMobil	USD	83.2	(0.4)	(0.6)	1.7	3.3	(0.6)
Shell	EUR	2,435	0.0	4.6	6.0	11.9	19.5
Petrochina	CNY	8.32	(0.8)	2.3	4.1	2.6	14.1
Gazprom	RUB	125.9	0.2	(0.0)	4.2	5.3	(10.0)
Petrobras	BRL	16.9	0.2	(0.5)	6.0	27.3	5.0
Refinery							
Phillips66	USD	93.6	0.1	1.7	(0.1)	9.3	18.3
Valero	USD	80.9	(0.9)	4.0	4.3	18.1	39.8
JX	JPY	607.4	0.0	2.4	5.5	22.7	49.1
Neste Oil	EUR	48.8	0.6	0.8	28.8	39.0	27.4

	Unit	Price	1D	1W	1M	3M	12M
Petrochemical			%	%	%	%	%
BASF	EUR	96.7	1.0	3.1	7.7	20.1	26.4
DowDuPont	USD	71.2	(1.2)	(1.9)	1.1	12.2	33.6
SABIC	SAR	99.4	0.0	0.9	(2.0)	2.3	18.3
Formosa Pla.	TWD	92.5	1.1	0.7	1.4	0.7	9.0
Shin-Etsu	JPY	12,110	0.0	6.6	19.4	18.8	54.2
Renewable							
Wacker	EUR	140.9	2.1	7.9	13.9	36.4	77.5
First Solar	USD	59.87	3.5	3.8	26.8	26.6	73.5
GCL-Poly	HKD	1.34	1.5	0.0	20.7	55.8	27.6
Tesla Motors	USD	306.1	2.3	(4.6)	(12.1)	(11.8)	63.3

4. Coverage Summary

	11/03	1D	1W	1M	3M	6M	12M	투자의견	TP	%	P/E	P/B
KOSPI	2,558	0.5	2.5	6.8	6.8	14.1	29.3				* 추정치는 12M fwd 기준임	
KOSPI화학	6,115	0.6	1.0	7.3	7.1	16.7	24.0				* 모든 coverage 업체의 실적은 연결기준임	
LG화학	414,000	(1.4)	2.1	5.6	20.9	50.0	70.4	매수	400,000	(3.4)	13.11	2.16
롯데케미칼	377,500	0.3	(2.7)	(0.1)	(4.3)	7.1	30.4	매수	410,000	8.6	5.94	1.30
한화케미칼	32,250	(1.8)	1.4	(0.6)	(2.6)	28.0	24.3	매수	39,000	20.9	5.44	0.90
금호석유화학	76,000	0.7	10.8	5.4	(3.3)	(1.0)	12.8	매수	100,000	31.6	12.88	1.41
KCC	391,500	1.3	0.4	4.5	(9.2)	14.8	1.0	매수	450,000	14.9	21.73	0.57
OCI	124,000	2.5	10.2	21.0	30.3	53.3	39.0	매수	120,000	(3.2)	15.75	0.95
SKC	40,350	2.5	(0.9)	(2.2)	7.2	41.1	48.1	매수	45,000	11.5	11.15	1.10
SK이노베이션	209,000	2.2	1.5	5.0	16.1	22.6	31.9	매수	210,000	0.5	8.43	1.12
S-Oil	127,000	0.4	(1.9)	(0.4)	7.6	27.0	54.9	매수	140,000	10.2	13.74	2.40
GS	65,600	(0.2)	(1.1)	0.0	(12.3)	11.0	21.9	매수	80,000	22.0	6.23	0.97
SK가스	94,200	3.0	0.2	(0.1)	(18.1)	(19.1)	(5.4)	매수	130,000	38.0	7.12	0.70
포스코대우	19,300	0.5	(2.5)	0.0	(19.8)	(20.1)	(17.7)	매수	25,000	29.5	10.81	0.84
LG상사	29,600	1.2	3.0	8.4	2.2	(10.6)	7.2	매수	38,000	28.4	10.78	0.96
한국전력	39,150	2.1	0.8	0.4	(11.9)	(11.9)	(20.0)	매수	55,000	40.5	7.51	0.31
한국가스공사	41,800	1.7	(0.4)	(0.7)	(16.9)	(8.9)	(11.1)	매수	60,000	43.5	8.54	0.54

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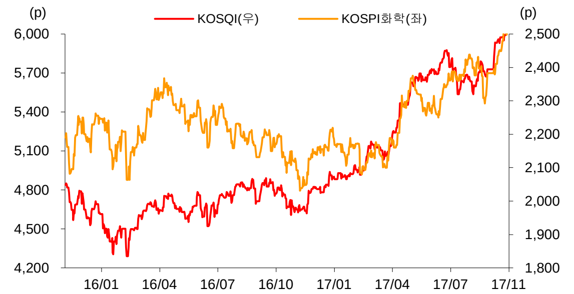
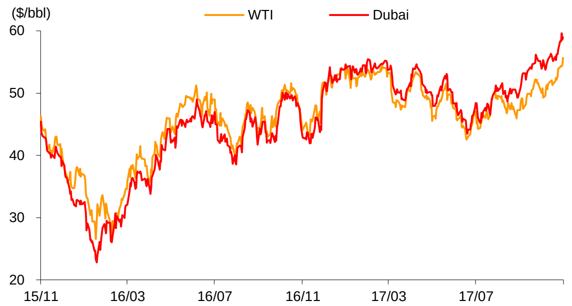
Key Chart

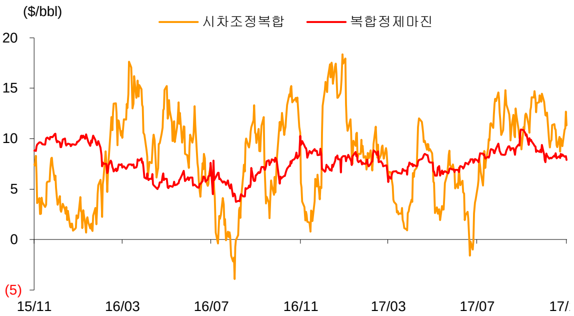
KOSPI/KOSPI화학



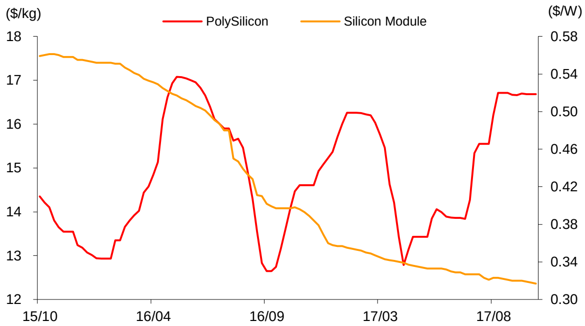
WTI/Dubai



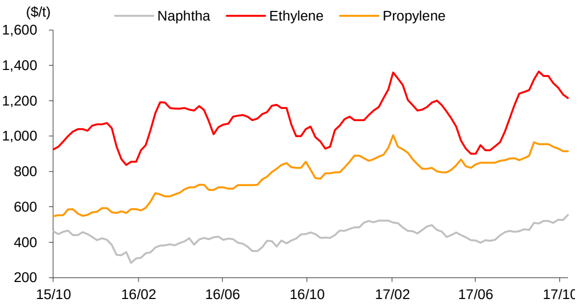
Complex & 1M lagging margin



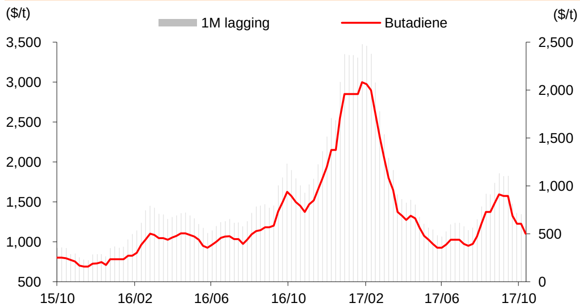
Polysilicon & Module prices



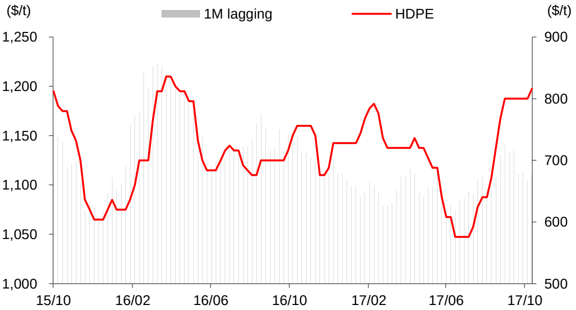
Naphtha/Ethylene/Propylene prices



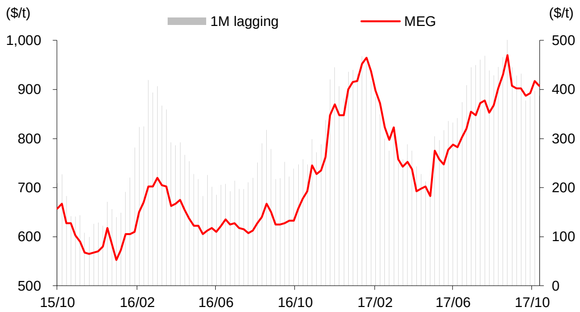
Butadiene price & 1M lagging naphtha spread



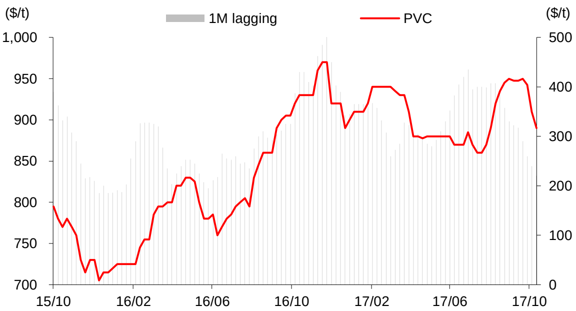
HDPE price & 1M lagging naphtha spread



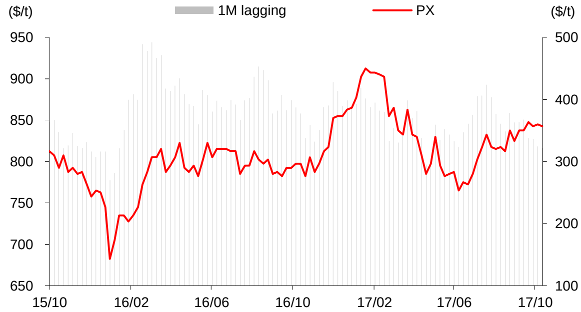
MEG price & 1M lagging naphtha spread



PVC price & 1M lagging naphtha spread



PX price & 1M lagging naphtha spread



자료: Bloomberg, Cischem, Petronet, Platts, Pvinsights, SK증권
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

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News Comment

Headline	(출처: Platts)
제목	[주간가격] 에틸렌, WoW 10$/mt 상승해 CFR NEA 1,250$/mt로 마감
결론	동북아 지역 재고 수요와 태국 PE 공장 가동 예정으로 공급 줄며 상승
세부	
	1) 동북아는 12월 도착 카고에 대한 스팟 수요가 증가하며 상승 마감
	2) 동북아는 2018년 term-contract 협상에 앞서 재고 축적 수요가 발생한 것
	3) 태국에서는 스팟 공급 물량이 제한되며 10월 초 악화된 센티를 살림
	4) 내년 초 가동되는 태국 PE 공장이 인근 지역 스팟 에틸렌 공급 줄임
	5) 동북아 지역 재고 수요와 태국 PE 공장 가동 예정으로 공급 줄며 상승

WTI Comment	(출처: 연합뉴스)
제목	수요증가 기대에 강세…WTI 2%↑
상승	원유수요가 증가할 것이라는 관측
요인	OPEC 등이 원유감산 시한을 연장할 것이라는 기대감
하락	
요인	

Issue 1	(출처: Platts)
제목	[주간가격] MEG, WoW 3$/mt 하락해 CFR China 900$/mt로 마감
결론	동중국 재고 증가와 최근 늘어난 숏 포지션으로 센티 악화된 모습임
세부	
	1) 이번주 동안 MEG 가격은 898-904$/mt 사이에서 반등을 반복함
	2) 그러나 위안화 표기 카고 거래는 내수 생산자들이 돌아와 더 활발했음
	3) Buying 센티는 지난주 숏 포지션 취한 트레이더들 때문에 약했음
	4) 동중국 재고가 3.4만톤 증가해 55.7만톤을 기록했다는 소식도 악재였음
	5) 동중국 재고 증가와 최근 늘어난 숏 포지션으로 센티 악화된 모습임

Issue 2	(출처: Platts)
제목	[주간가격] BD, WoW 5$/mt 하락해 CFR China 995$/mt로 마감
결론	아시아 역내 BD 수요 감소와 공급 증가로 센티먼트 악화될 전망
세부	
	1) 중국 내수 공급 과잉 우려로 수요가 약해지는 모습을 보였음
	2) Sinopec은 동중국 오퍼 가격을 1,078$/mt로 7.6% 인하함
	3) 중국 내수 공급은 Sinopec이 SBR 공장 셧다운하며 증가함
	4) LG화학의 ABS 공장이 11월 8일부터 정기보수에 진입함
	5) 아시아 역내 BD 수요 감소와 공급 증가로 센티먼트 악화될 전망

Issue 3	(출처: Platts)
제목	[주간가격] SBR, WoW 130$/mt 하락해 CFR SEA 1,570$/mt로 마감
결론	원재료인 BD가 12주 최저치를 보이며 약세를 띄자 매수자가 관망중임
세부	
	1) SBR 생산자들, "원재료인 BD 약세로 고객들이 매수에 나서지 않음"
	2) 이번 주 BD 가격은 CFR China 995$/mt로 12주 내 최저치를 기록함
	3) 원재료 가격 하락 속에 SBR 내수 가격은 5.3% 하락한 1,504$/mt 기록
	4) Sinopec의 SBR 공장이 환경 기준 미충족으로 셧다운해 BD 공급 증가
	5) 원재료인 BD가 12주 최저치를 보이며 약세를 띄자 매수자가 관망중임

Issue 4	(출처: Platts)
제목	[주간가격] PX, WoW 33$/mt 상승해 FOB Korea 864.33$/mt로 마감
결론	다운스트림 수요 호조로 일시적 강세였지만 공급 과잉으로 하락 전망
세부	
	1) 12월물에 대한 다운스트림에서의 수요 증가로 아시아 지역 PX 강세
	2) Shaoxing Huabin의 1.4백만톤/년 규모의 PTA 공장이 재가동됨
	3) PX가 강세를 보이며 CFR Japan 납사 marker와의 spread가 더 확대됨
	4) 2018년 term 계약을 앞두고 대부분 PX 공급과잉으로 할인을 예상중임
	5) 다운스트림 수요 호조로 일시적 강세였지만 공급 과잉으로 하락 전망

Issue 5	(출처: Platts)
제목	[주간가격] PTA, WoW 10$/mt 상승해 CFR China 660$/mt로 마감
결론	진입 예정 capa가 많아 유럽, 중동으로의 수출이 늘어도 강세는 힘들 것
세부	
	1) 11월 shipment 물량에 대해 재고 수준이 낮아지며 강세를 보였음
	2) 브렌트유는 WoW 1.45$/b 상승해 60.74$/b로 마감함
	3) 매수자와 매도자간 제시 가격이 차이가 벌어져 있는 상황임
	4) 아시아 지역에서 유럽, 중동, 러시아와 미주로의 수출은 지속될 전망
	5) 진입 예정 capa가 많아 유럽, 중동으로의 수출이 늘어도 강세는 힘들 것

Issue 6	(출처: PVinsights)
제목	[주간가격] Mono 제품 가격들이 수요 약세로 기대보다 낙폭을 키움
결론	전반적으로 수요 약세 영향으로 제품 가격이 하락세를 시현함
세부	
	1) 폴리실리콘이 공급 차질이 길어지며 예상 외로 안정적으로 유지중임
	2) Mono-crystalline wafer capa 확장으로 고순도 폴리실리콘 수요 개선됨
	3) Multi-crystalline wafer은 diamond wired wafer로의 전환 빨라지며 조정
	4) Solar Cell 가격은 수요 약세 전망으로 2Q17 이래 최저 수준으로 마감
	5) 전반적으로 수요 약세 영향으로 제품 가격이 하락세를 시현함

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Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
F/X	**USD/EUR**	0.862	0.858	0.861	0.852	0.843	0.919	0.901	0.951	0.901	0.904	0.894
	Change, %		0.4	0.0	1.2	2.3	(6.2)	(4.3)	(9.4)	(4.4)	(4.7)	(3.6)
	USD/JPY	114.1	114.1	113.7	112.9	110.1	112.8	103.0	117.0	121.1	108.8	112.0
	Change, %		(0.0)	0.4	1.1	3.7	1.2	10.8	(2.5)	(5.8)	4.9	1.8
	USD/KRW	1,113.8	1,114.3	1,130.3	1,147.1	1,128.6	1,131.2	1,139.3	1,205.8	1,131.2	1,160.5	1,138.0
	Change, %		(0.0)	(1.5)	(2.9)	(1.3)	(1.5)	(2.2)	(7.6)	(1.5)	(4.0)	(2.1)
Agriculture	**Corn**	348.3	350.5	348.8	349.5	363.5	366.3	348.0	352.0	376.8	358.5	362.1
	Change, %		(0.6)	(0.1)	(0.4)	(4.2)	(4.9)	0.1	(1.1)	(7.6)	(2.9)	(3.8)
	Soybean	977.0	989.0	975.3	955.3	950.5	965.5	979.8	996.5	945.4	987.5	975.6
	Change, %		(1.2)	0.2	2.3	2.8	1.2	(0.3)	(2.0)	3.3	(1.1)	0.1
	Wheat	425.8	426.0	427.3	448.0	457.8	443.0	412.0	408.0	508.1	436.4	439.4
	Change, %		(0.1)	(0.4)	(5.0)	(7.0)	(3.9)	3.3	4.4	(16.2)	(2.4)	(3.1)
	Rice	11.3	11.2	11.6	12.0	12.4	9.6	9.5	9.4	11.1	10.3	10.9
	Change, %		1.2	(2.3)	(6.1)	(8.9)	17.1	18.2	20.6	2.1	9.1	3.5
	Oats	263.0	264.5	265.3	251.3	285.3	246.3	222.0	228.5	250.2	196.3	252.8
	Change, %		(0.6)	(0.8)	4.7	(7.8)	6.8	18.5	15.1	5.1	34.0	4.0
MYR/mt	**Palm Oil**	2,784.0	2,798.0	2,786.0	2,704.0	2,588.0	2,705.0	2,791.0	3,218.0	2,190.3	2,653.8	2,836.4
	Change, %		(0.5)	(0.1)	3.0	7.6	2.9	(0.3)	(13.5)	27.1	4.9	(1.8)
	Cocoa	2,061.0	2,052.0	2,115.0	2,082.0	2,061.0	1,780.0	2,705.0	2,126.0	3,091.6	2,854.0	2,005.3
	Change, %		0.4	(2.6)	(1.0)	0.0	15.8	(23.8)	(3.1)	(33.3)	(27.8)	2.8
	Cotton	68.7	69.1	68.2	68.2	71.6	80.7	68.1	70.7	63.3	65.6	73.5
	Change, %		(0.5)	0.8	0.8	(4.0)	(14.8)	1.0	(2.7)	8.6	4.8	(6.5)
	Sugar	14.4	14.2	14.6	14.0	14.3	15.8	21.5	19.5	13.1	18.2	16.0
	Change, %		1.1	(1.7)	2.4	0.5	(8.8)	(33.1)	(26.3)	9.4	(20.8)	(10.1)
	Coffee	124.0	126.4	126.6	125.5	140.2	135.0	165.7	137.1	132.6	136.1	134.6
	Change, %		(1.9)	(2.1)	(1.2)	(11.6)	(8.2)	(25.2)	(9.6)	(6.6)	(8.9)	(7.9)
Energy	**WTI**	55.6	54.5	53.9	50.4	49.0	47.8	44.7	53.7	48.8	43.4	49.8
	Change, %		2.0	3.2	10.4	13.5	16.4	24.6	3.6	13.9	28.3	11.8
	Brent	62.1	60.6	60.4	56.0	52.0	50.8	46.4	56.8	53.7	45.1	53.3
	Change, %		2.4	2.7	10.8	19.3	22.2	33.9	9.2	15.6	37.7	16.5
	Natural Gas	3.0	2.9	2.8	2.9	2.8	3.2	2.8	3.7	2.6	2.6	3.0
	Change, %		1.7	8.4	3.1	6.6	(7.6)	7.8	(19.9)	13.5	16.9	(1.9)
	Ethanol	1.4	1.4	1.4	1.5	1.6	1.5	1.6	1.6	1.5	1.5	1.5
	Change, %		0.0	1.8	(4.1)	(8.9)	(7.5)	(10.4)	(11.6)	(5.9)	(6.3)	(6.7)
	RBOB Gasoline	179.3	177.0	176.9	156.6	163.2	153.4	142.5	166.5	163.6	140.0	160.8
	Change, %		1.3	1.4	14.6	9.9	16.9	25.9	7.7	9.6	28.1	11.5
	Coal	99.0	100.2	97.5	97.0	94.6	78.0	106.5	88.4	59.0	65.5	86.4
	Change, %		(1.2)	1.6	2.1	4.7	26.9	(7.0)	12.0	67.9	51.2	14.5
Metal	**Gold**	1,269.7	1,276.1	1,273.9	1,271.7	1,268.5	1,238.2	1,302.7	1,152.3	1,160.6	1,248.5	1,255.6
	Change, %		(0.5)	(0.3)	(0.2)	0.1	2.5	(2.5)	10.2	9.4	1.7	1.1
	Silver	16.8	17.1	16.9	16.6	16.7	16.5	18.4	15.9	15.7	17.1	17.2
	Change, %		(1.6)	(0.2)	1.2	1.1	2.2	(8.3)	5.8	7.1	(1.6)	(1.9)
	Copper	6,895.0	6,929.0	6,830.0	6,520.0	6,352.0	5,600.0	4,960.0	5,535.5	5,503.1	4,872.0	6,078.6
	Change, %		(0.5)	1.0	5.8	8.5	23.1	39.0	24.6	25.3	41.5	13.4
	Nickel	820.1	808.6	750.0	701.2	660.9	595.0	700.1	682.0	759.5	646.4	666.9
	Change, %		1.4	9.3	17.0	24.1	37.8	17.1	20.2	8.0	26.9	23.0
	Zinc	3,219.0	3,258.0	3,172.5	3,264.0	2,792.0	2,575.0	2,487.0	2,576.0	1,941.9	2,097.5	2,833.3
	Change, %		(1.2)	1.5	(1.4)	15.3	25.0	29.4	25.0	65.8	53.5	13.6
	Lead	2,462.3	2,441.8	2,418.3	2,588.0	2,350.0	2,199.0	2,081.5	2,003.5	1,791.2	1,868.3	2,284.6
	Change, %		0.8	1.8	(4.9)	4.8	12.0	18.3	22.9	37.5	31.8	7.8
	Aluminum	16,045.0	16,045.0	16,290.0	16,235.0	14,615.0	13,855.0	13,895.0	12,765.0	12,184.0	12,373.5	14,525.8
	Change, %		0.0	(1.5)	(1.2)	9.8	15.8	15.5	25.7	31.7	29.7	10.5
	Cobalt	60,860.0	61,370.0	60,550.0	59,651.0	58,000.0	54,750.0	28,550.0	32,734.0	28,444.4	25,480.1	53,726.8
	Change, %		(0.8)	0.5	2.0	4.9	11.2	113.2	85.9	114.0	138.9	13.3
	HR Coil	612.0	612.0	605.0	595.0	620.0	610.0	492.0	633.0	461.5	519.3	618.8
	Change, %		0.0	1.2	2.9	(1.3)	0.3	24.4	(3.3)	32.6	17.8	(1.1)
	Scrap	330.0	330.0	330.0	335.0	354.0	355.0	235.0	302.0	252.9	275.7	343.7
	Change, %		0.0	0.0	(1.5)	(6.8)	(7.0)	40.4	9.3	30.5	19.7	(4.0)

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

SK Energy Daily

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Refining Price Data

Daily Price		11/03	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	**WTI**	55.6	54.5	53.9	49.3	49.6	46.2	44.1	53.7	48.8	43.4	49.7
	Change, %		*2.0*	*3.2*	*12.9*	*12.2*	*20.4*	*26.3*	*3.6*	*14.1*	*28.3*	*12.0*
	Dubai	58.9	58.6	57.0	55.3	50.4	48.0	42.8	53.8	50.8	41.3	51.6
	Change, %		*0.6*	*3.4*	*6.6*	*17.0*	*22.8*	*37.6*	*9.5*	*16.0*	*42.7*	*14.2*
Crude Oil	**Gasoline(휘발유)**	73.8	73.5	71.9	70.1	66.2	60.7	59.0	69.8	69.5	56.3	66.6
Product	*Change, %*		*0.5*	*2.7*	*5.3*	*11.5*	*21.7*	*25.1*	*5.7*	*6.2*	*31.2*	*10.8*
	Kerosene(등유)	71.4	71.0	70.4	68.0	63.4	57.5	55.3	66.4	64.7	52.9	63.5
	Change, %		*0.5*	*1.5*	*5.0*	*12.7*	*24.3*	*29.0*	*7.5*	*10.3*	*35.0*	*12.5*
	Diesel(경유)	70.1	70.5	70.2	68.7	63.4	58.0	56.8	65.5	64.8	52.1	64.0
	Change, %		*(0.5)*	*(0.2)*	*2.2*	*10.6*	*20.8*	*23.4*	*7.1*	*8.3*	*34.6*	*9.6*
	Bunker-C	55.6	55.2	53.3	51.6	46.9	44.8	41.9	52.1	45.3	35.5	48.4
	Change, %		*0.7*	*4.3*	*7.6*	*18.4*	*24.0*	*32.7*	*6.8*	*22.8*	*56.5*	*14.9*
	Naphtha	63.0	62.1	60.5	57.0	50.1	46.8	46.2	53.5	52.6	42.6	51.7
	Change, %		*1.5*	*4.2*	*10.5*	*25.7*	*34.6*	*36.4*	*17.8*	*19.7*	*47.9*	*21.9*
Dubai	**Gasoline(휘발유)**	14.9	14.9	14.9	14.8	15.8	12.7	16.2	16.0	18.7	14.9	15.0
Spread	*Change*		*0.0*	*(0.0)*	*0.1*	*(0.9)*	*2.2*	*(1.3)*	*(1.1)*	*(3.8)*	*(0.0)*	*(0.1)*
	Kerosene(등유)	12.5	12.5	13.4	12.8	13.0	9.5	12.5	12.6	14.0	11.6	11.9
	Change		*0.0*	*(0.9)*	*(0.3)*	*(0.5)*	*3.0*	*(0.0)*	*(0.1)*	*(1.5)*	*0.9*	*0.6*
	Diesel(경유)	11.2	11.9	13.2	13.4	13.1	10.1	14.0	11.7	14.0	10.8	12.4
	Change		*(0.7)*	*(2.0)*	*(2.2)*	*(1.9)*	*1.1*	*(2.8)*	*(0.5)*	*(2.8)*	*0.4*	*(1.2)*
	Bunker-C	(3.4)	(3.4)	(3.7)	(3.6)	(3.4)	(3.2)	(1.0)	(1.8)	(5.5)	(5.8)	(3.2)
	Change		*0.0*	*0.4*	*0.3*	*0.1*	*(0.2)*	*(2.4)*	*(1.6)*	*2.2*	*2.4*	*(0.1)*
	Naphtha	4.1	3.5	3.5	1.8	(0.2)	(1.2)	3.3	(0.4)	1.8	1.3	0.1
	Change		*0.6*	*0.6*	*2.3*	*4.3*	*5.2*	*0.7*	*4.4*	*2.2*	*2.8*	*4.0*
Refining	**Simple(단순)**	2.9	3.1	3.4	3.3	3.5	2.2	5.2	3.8	3.3	1.9	3.2
Margin	*Change*		*(0.1)*	*(0.4)*	*(0.4)*	*(0.6)*	*0.7*	*(2.3)*	*(0.9)*	*(0.4)*	*1.0*	*(0.3)*
	Complex(복합)	7.7	7.9	8.4	8.3	8.4	6.3	9.8	8.3	9.3	7.0	8.0
	Change		*(0.2)*	*(0.7)*	*(0.6)*	*(0.7)*	*1.4*	*(2.1)*	*(0.6)*	*(1.6)*	*0.7*	*(0.3)*
	Complex(lagging)	12.2	11.3	9.3	12.6	10.4	2.6	3.8	18.0	7.3	8.5	8.4
	Change		*0.8*	*2.9*	*(0.4)*	*1.8*	*9.5*	*8.4*	*(5.8)*	*4.9*	*3.7*	*3.8*

자료 : Petronet, SK증권

참고 1) Crude Oil 가격은 현물(spot) 기준으로 선물(future) 가격과 다를 수 있음

참고 2) Gasoline은 95RON, 경유는 L/P 0.5%, Bunker-C는 380cst/4.0% 기준임

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Petrochemical Price Data

Daily Price			11/03	11/02	11/01	10/31	10/30	10/27	10/26	10/25	10/24	10/23
Spot Price	**Naphtha**	CFR Japan	580.0	573.1	567.0	564.5	557.5	554.0	548.5	546.5	534.9	539.4
	Ethylene	CFR SE Asia	1,140.0	1,140.0	1,140.0	1,140.0	1,140.0	1,140.0	1,150.0	1,155.0	1,155.0	1,160.0
	Propylene	FOB Korea	918.0	918.0	923.0	925.0	940.0	943.0	943.0	945.0	945.0	945.0
	Butadiene	FOB Korea	945.0	945.0	945.0	950.0	950.0	950.0	1,165.0	1,165.0	1,165.0	1,165.0
	HDPE	CFR FE Asia	1,240.0	1,240.0	1,240.0	1,240.0	1,240.0	1,240.0	1,240.0	1,240.0	1,225.0	1,220.0
	LDPE	CFR FE Asia	1,240.0	1,240.0	1,240.0	1,240.0	1,250.0	1,250.0	1,255.0	1,255.0	1,255.0	1,250.0
	LLDPE	CFR FE Asia	1,170.0	1,170.0	1,170.0	1,170.0	1,170.0	1,180.0	1,190.0	1,190.0	1,190.0	1,185.0
	MEG	CFR China	900.0	898.0	898.0	898.0	904.0	903.0	900.0	895.0	900.0	902.0
	PP	CFR FE Asia	1,130.0	1,130.0	1,120.0	1,115.0	1,115.0	1,125.0	1,130.0	1,130.0	1,120.0	1,120.0
	PX	CFR China	864.3	855.3	854.7	840.7	839.3	831.3	831.3	835.3	834.3	835.3
	PTA	CFR China	660.0	660.0	655.0	653.0	653.0	650.0	650.0	645.0	645.0	645.0
	Benzene	FOB Korea	815.0	811.0	812.0	794.0	795.0	791.0	794.0	798.0	800.5	803.5
	Toluene	FOB Korea	676.0	676.0	678.0	668.0	672.0	664.5	658.5	658.5	654.5	657.5
	Xylene	FOB Korea	677.0	677.0	671.0	664.0	661.0	660.0	654.0	658.0	658.0	659.0
	SM	FOB Korea	1,168.0	1,169.0	1,161.0	1,159.5	1,165.5	1,169.5	1,193.5	1,199.5	1,188.5	1,190.5

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	**Naphtha**	CFR Japan	554.5	526.5	520.5	456.5	411.5	446.5	484.5	493.0	399.5	475.2
	Change, %			*5.3*	*6.5*	*21.5*	*34.8*	*24.2*	*14.4*	*12.5*	*38.8*	*16.7*
	Ethylene	CFR SE Asia	1,130.0	1,175.0	1,255.0	975.0	875.0	995.0	990.0	1,103.7	1,040.9	1,068.1
	Change, %			*(3.8)*	*(10.0)*	*15.9*	*29.1*	*13.6*	*14.1*	*2.4*	*8.6*	*5.8*
	Propylene	CFR SE Asia	807.5	795.0	835.0	762.5	742.5	687.5	815.0	770.0	705.7	876.6
	Change, %			*1.6*	*(3.3)*	*5.9*	*8.8*	*17.5*	*(0.9)*	*4.9*	*14.4*	*(7.9)*
	Butadiene	CFR SE Asia	1,050.0	1,175.0	1,525.0	900.0	975.0	1,450.0	2,100.0	877.5	1,116.8	1,567.5
	Change, %			*(10.6)*	*(31.1)*	*16.7*	*7.7*	*(27.6)*	*(50.0)*	*19.7*	*(6.0)*	*(33.0)*
	Benzene	CFR SE Asia	810.0	802.5	805.0	742.5	760.0	655.0	822.5	690.0	646.7	831.0
	Change, %			*0.9*	*0.6*	*9.1*	*6.6*	*23.7*	*(1.5)*	*17.4*	*25.3*	*(2.5)*
	Toluene	CFR SE Asia	690.0	695.0	700.0	635.0	630.0	660.0	690.0	700.8	630.5	684.0
	Change, %			*(0.7)*	*(1.4)*	*8.7*	*9.5*	*4.5*	*0.0*	*(1.5)*	*9.4*	*0.9*
	Xylene	CFR SE Asia	655.0	652.5	657.5	622.5	610.0	650.0	675.0	699.3	627.7	664.0
	Change, %			*0.4*	*(0.4)*	*5.2*	*7.4*	*0.8*	*(3.0)*	*(6.3)*	*4.3*	*(1.4)*
Spread	**Ethylene**	-Naphtha	575.5	648.5	734.5	518.5	463.5	548.5	505.5	610.6	641.4	592.9
	Change, %			*(11.3)*	*(21.6)*	*11.0*	*24.2*	*4.9*	*13.8*	*(5.8)*	*(10.3)*	*(2.9)*
	Propylene	-Naphtha	253.0	268.5	314.5	306.0	331.0	241.0	330.5	277.0	306.2	401.4
	Change, %			*(5.8)*	*(19.6)*	*(17.3)*	*(23.6)*	*5.0*	*(23.4)*	*(8.7)*	*(17.4)*	*(37.0)*
	Butadiene	-Naphtha	495.5	648.5	1,004.5	443.5	563.5	1,003.5	1,615.5	384.5	717.3	1,092.3
	Change, %			*(23.6)*	*(50.7)*	*11.7*	*(12.1)*	*(50.6)*	*(69.3)*	*28.9*	*(30.9)*	*(54.6)*
	Benzene	-Naphtha	255.5	276.0	284.5	286.0	348.5	208.5	338.0	197.0	247.2	355.8
	Change, %			*(7.4)*	*(10.2)*	*(10.7)*	*(26.7)*	*22.5*	*(24.4)*	*29.7*	*3.4*	*(28.2)*
	Toluene	-Naphtha	135.5	168.5	179.5	178.5	218.5	213.5	205.5	207.8	231.0	208.8
	Change, %			*(19.6)*	*(24.5)*	*(24.1)*	*(38.0)*	*(36.5)*	*(34.1)*	*(34.8)*	*(41.3)*	*(35.1)*
	Xylene	-Naphtha	100.5	126.0	137.0	166.0	198.5	203.5	190.5	206.3	228.2	188.8
	Change, %			*(20.2)*	*(26.6)*	*(39.5)*	*(49.4)*	*(50.6)*	*(47.2)*	*(51.3)*	*(56.0)*	*(46.8)*

자료 : Cischem, Platts, Bloomberg, SK증권
참고 : Spread는 Polymer와 Naphtha의 가격차이임

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Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	**HDPE**	CFR SE Asia	1,197.5	1,187.5	1,187.5	1,057.5	1,047.5	1,160.0	1,142.5	1,230.1	1,134.6	1,131.4
	Change, %			*0.8*	*0.8*	*13.2*	*14.3*	*3.2*	*4.8*	*(2.7)*	*5.5*	*5.8*
	MEG	CFR SE Asia	907.5	917.5	902.5	872.5	802.5	677.5	847.5	780.8	660.8	839.9
	Change, %			*(1.1)*	*0.6*	*4.0*	*13.1*	*33.9*	*7.1*	*16.2*	*37.3*	*8.1*
	PVC	CFR SE Asia	890.0	910.0	947.5	860.0	870.0	930.0	920.0	820.8	823.4	906.0
	Change, %			*(2.2)*	*(6.1)*	*3.5*	*2.3*	*(4.3)*	*(3.3)*	*8.4*	*8.1*	*(1.8)*
	PP	CFR SE Asia	1,147.5	1,167.5	1,167.5	1,072.5	1,037.5	1,030.0	1,032.5	1,109.8	978.4	1,088.8
	Change, %			*(1.7)*	*(1.7)*	*7.0*	*10.6*	*11.4*	*11.1*	*3.4*	*17.3*	*5.4*
	2-EH	CFR Korea	1,000.0	1,000.0	990.0	970.0	920.0	790.0	865.0	930.1	772.4	959.4
	Change, %			*0.0*	*1.0*	*3.1*	*8.7*	*26.6*	*15.6*	*7.5*	*29.5*	*4.2*
	ABS	CFR SE Asia	1,920.0	1,950.0	2,060.0	1,820.0	1,790.0	1,460.0	1,635.0	1,431.1	1,347.1	1,816.7
	Change, %			*(1.5)*	*(6.8)*	*5.5*	*7.3*	*31.5*	*17.4*	*34.2*	*42.5*	*5.7*
	SBR	CFR SE Asia	1,700.0	1,750.0	1,820.0	1,490.0	1,450.0	1,900.0	2,000.0	1,332.1	1,483.0	2,047.2
	Change, %			*(2.9)*	*(6.6)*	*14.1*	*17.2*	*(10.5)*	*(15.0)*	*27.6*	*14.6*	*(17.0)*
	SM	CFR SE Asia	1,210.0	1,217.5	1,350.0	1,172.5	1,152.5	1,057.5	1,205.0	1,100.7	1,064.6	1,243.9
	Change, %			*(0.6)*	*(10.4)*	*3.2*	*5.0*	*14.4*	*0.4*	*9.9*	*13.7*	*(2.7)*
	Caustic	FOB NEA	598.0	550.0	484.0	462.5	447.5	365.0	422.5	296.8	316.6	455.8
	Change, %			*8.7*	*23.6*	*29.3*	*33.6*	*63.8*	*41.5*	*101.5*	*88.9*	*31.2*
	PX	CFR SE Asia	842.5	845.0	837.5	817.5	775.0	797.5	855.0	842.9	790.4	834.3
	Change, %			*(0.3)*	*0.6*	*3.1*	*8.7*	*5.6*	*(1.5)*	*(0.0)*	*6.6*	*1.0*
	PO	CFR China	1,685.0	1,685.0	1,560.0	1,540.0	1,485.0	1,475.0	1,562.5	1,683.4	1,396.8	1,558.6
	Change, %			*0.0*	*8.0*	*9.4*	*13.5*	*14.2*	*7.8*	*0.1*	*20.6*	*8.1*
	Caprolactam	CFR SE Asia	2,170.0	2,070.0	1,830.0	1,730.0	1,610.0	1,425.0	1,850.0	1,581.5	1,344.9	1,906.9
	Change, %			*4.8*	*18.6*	*25.4*	*34.8*	*52.3*	*17.3*	*37.2*	*61.4*	*13.8*
	PTA	CFR SE Asia	667.5	667.5	667.5	667.5	630.0	617.5	642.5	648.0	613.7	659.5
	Change, %			*0.0*	*0.0*	*0.0*	*6.0*	*8.1*	*3.9*	*3.0*	*8.8*	*1.2*
Spread	**HDPE**		643.0	661.0	667.0	601.0	636.0	713.5	658.0	737.1	735.1	656.2
	Change, %			*(2.7)*	*(3.6)*	*7.0*	*1.1*	*(9.9)*	*(2.3)*	*(12.8)*	*(12.5)*	*(2.0)*
	MEG		353.0	391.0	382.0	416.0	391.0	231.0	363.0	287.8	261.3	364.7
	Change, %			*(9.7)*	*(7.6)*	*(15.1)*	*(9.7)*	*52.8*	*(2.8)*	*22.7*	*35.1*	*(3.2)*
	PVC		335.5	383.5	427.0	403.5	458.5	483.5	435.5	327.8	423.9	430.8
	Change, %			*(12.5)*	*(21.4)*	*(16.9)*	*(26.8)*	*(30.6)*	*(23.0)*	*2.3*	*(20.9)*	*(22.1)*
	PP		593.0	641.0	647.0	616.0	626.0	583.5	548.0	616.8	578.9	613.5
	Change, %			*(7.5)*	*(8.3)*	*(3.7)*	*(5.3)*	*1.6*	*8.2*	*(3.9)*	*2.4*	*(3.3)*
	2-EH		445.5	473.5	469.5	513.5	508.5	343.5	380.5	437.0	372.9	484.2
	Change, %			*(5.9)*	*(5.1)*	*(13.2)*	*(12.4)*	*29.7*	*17.1*	*1.9*	*19.5*	*(8.0)*
	ABS		1,365.5	1,423.5	1,539.5	1,363.5	1,378.5	1,013.5	1,150.5	938.1	947.6	1,341.5
	Change, %			*(4.1)*	*(11.3)*	*0.1*	*(0.9)*	*34.7*	*18.7*	*45.6*	*44.1*	*1.8*
	SBR	BD spread	650.0	575.0	295.0	590.0	475.0	450.0	(100.0)	454.7	366.2	479.7
	Change, %			*13.0*	*120.3*	*10.2*	*36.8*	*44.4*	*(750.0)*	*43.0*	*77.5*	*35.5*
	SM		655.5	691.0	829.5	716.0	741.0	611.0	720.5	607.7	665.1	768.7
	Change, %			*(5.1)*	*(21.0)*	*(8.4)*	*(11.5)*	*7.3*	*(9.0)*	*7.9*	*(1.4)*	*(14.7)*
	Caustic											
	Change, %											
	PX		288.0	318.5	317.0	361.0	363.5	351.0	370.5	349.9	390.9	359.1
	Change, %			*(9.6)*	*(9.1)*	*(20.2)*	*(20.8)*	*(17.9)*	*(22.3)*	*(17.7)*	*(26.3)*	*(19.8)*
	PO	propylene sprea	877.5	890.0	725.0	777.5	742.5	787.5	747.5	913.4	691.1	682.0
	Change, %			*(1.4)*	*21.0*	*12.9*	*18.2*	*11.4*	*17.4*	*(3.9)*	*27.0*	*28.7*
	Caprolactam	benzene spreac	1,360.0	1,267.5	1,025.0	987.5	850.0	770.0	1,027.5	891.6	698.2	1,076.0
	Change, %			*7.3*	*32.7*	*37.7*	*60.0*	*76.6*	*32.4*	*52.5*	*94.8*	*26.4*
	PTA	px spread	77.8	76.0	81.3	95.3	87.5	59.3	44.0	58.0	60.4	75.5
	Change, %			*2.3*	*(4.3)*	*(18.4)*	*(11.1)*	*31.2*	*76.7*	*34.0*	*28.7*	*3.0*

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

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Global peers

	Currency	11/03	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER 17E	PER 18E	PBR 17E	PBR 18E	EV/EBITDA 17E	EV/EBITDA 18E
Petrochemical																
DowDuPont	USD	71.2	(1.2)	(1.9)	1.1	12.2	15.3	33.6	24.4	166,471	20.7	17.2	1.6	1.9	11.6	10.0
Eastman	USD	91.3	0.2	(1.8)	0.1	8.8	16.2	27.9	21.4	13,126	12.9	11.2	2.6	2.4	9.3	8.6
BASF	EUR	96.7	1.0	3.1	7.7	20.1	8.2	26.4	9.5	103,099	15.9	15.8	2.6	2.5	8.5	8.2
Akzo Nobel	EUR	77.9	1.1	0.6	(0.5)	1.0	(2.1)	36.0	31.2	22,774	19.0	18.1	3.3	3.2	10.2	9.8
Arkema	EUR	109.4	0.2	1.3	5.2	14.5	12.4	30.8	17.7	9,626	16.0	14.6	2.1	1.9	7.1	6.7
Lanxess	EUR	70.3	1.2	3.1	5.4	6.0	6.5	26.2	12.8	7,465	18.3	15.9	2.4	2.2	7.8	8.2
Sumitomo Chemical	JPY	820	0.0	2.0	17.0	28.9	29.3	69.8	47.5	11,898	11.2	10.9	1.5	1.4	7.9	7.6
Mitsubishi Chemical	JPY	1,204	0.0	1.2	10.0	26.3	35.8	77.1	58.8	15,889	9.9	9.8	1.4	1.3	6.8	6.6
Shin-Etsu Chemical	JPY	12,110	0.0	6.6	19.4	18.8	26.2	54.2	33.6	45,866	23.6	20.8	2.3	2.1	10.6	9.2
Asahi Kasei	JPY	1,399	0.0	0.3	0.4	8.4	30.3	49.1	37.2	17,199	15.4	15.0	1.6	1.5	7.7	7.5
JSR	JPY	2,213	0.0	(0.2)	4.1	15.7	9.7	43.1	20.1	4,386	15.7	15.1	1.3	1.2	8.5	8.0
Nitto Denko	JPY	11,295	0.0	11.0	18.3	8.0	26.2	53.7	25.9	17,202	21.4	19.7	2.6	2.4	9.6	9.0
SABIC	SAR	99.4	0.0	0.9	(2.0)	2.3	1.5	18.3	8.7	79,546	14.9	14.2	1.8	1.7	7.5	7.3
Yansab	SAR	55.8	0.0	1.2	(4.6)	2.6	2.0	24.6	2.5	8,372	14.0	13.0	2.3	2.2	8.8	8.5
Formosa Plastics	TWD	92.5	1.1	0.7	1.4	0.7	1.3	9.0	3.7	19,483	13.5	14.1	1.8	1.7	19.5	19.2
Formosa Fiber	TWD	92.5	0.9	0.5	1.0	0.9	(0.5)	(1.1)	(3.9)	17,939	12.0	12.6	1.6	1.6	10.7	10.7
Nan Ya Plastics	TWD	75.0	0.0	1.1	1.4	(0.5)	3.0	17.2	5.3	19,681	14.5	15.0	1.7	1.7	15.4	15.1
Sinopec Shanghai	CNY	6.42	(0.2)	1.9	1.7	(5.6)	(0.5)	9.7	(0.3)	9,163	12.3	11.8	2.5	2.2	6.7	6.7
Sinopec Yizheng(Fibe	CNY	3.05	3.4	(0.7)	(3.2)	(5.3)	(3.8)	(22.6)	(25.6)	5,910	#N/A N/A	56.5	5.8	5.9	28.6	14.9
Reliance	INR	945	(0.1)	1.7	18.4	14.6	38.0	84.6	74.7	95,083	17.9	14.6	2.0	1.7	12.1	10.1
Industries Qatar	QAR	95.8	0.0	0.8	3.0	(0.3)	(5.7)	(4.5)	(18.5)	15,105	16.3	13.9	1.7	1.6	54.9	51.5
PTT Chemical	THB	78.8	1.6	(2.8)	(1.6)	9.0	5.4	31.8	25.0	10,665	10.4	10.6	1.4	1.3	5.5	5.4
Petronas	MYR	7.3	(0.3)	(1.2)	0.0	4.6	2.0	5.0	4.4	13,759	15.8	15.8	2.0	1.9	8.6	8.6
LG화학	KRW	414,000	(1.4)	2.1	5.6	25.8	50.5	69.0	58.6	26,163	15.4	14.6	2.0	1.8	6.8	6.4
롯데케미칼	KRW	377,500	0.3	(2.7)	(0.1)	0.3	5.6	28.2	2.3	11,583	5.6	5.6	1.1	0.9	3.8	3.4
한화케미칼	KRW	32,250	(1.8)	1.4	(0.6)	(2.0)	26.7	22.4	30.6	4,758	5.2	5.7	0.9	0.8	7.0	6.8
금호석유	KRW	76,000	0.7	10.8	5.4	(2.1)	0.8	11.6	(7.3)	2,073	13.2	12.3	1.4	1.3	9.7	8.6
SKC	KRW	40,350	2.5	(0.9)	(2.2)	10.4	40.3	46.7	22.3	1,356	10.8	9.7	1.0	0.9	9.5	7.9
국도화학	KRW	60,700	1.5	3.1	10.0	6.5	27.1	13.0	10.6	316	0.0	0.0	0.0	0.0	0.0	0.0
효성	KRW	7,920	0.4	(5.5)	19.1	19.1	2.9	49.4	16.5	4,338	8.3	7.3	1.2	1.1	6.8	6.0
Average			**0.4**	**1.2**	**4.7**	**8.3**	**13.7**	**31.3**	**18.3**							
Refinery																
Valero	USD	80.9	(0.9)	4.0	4.3	18.1	24.6	39.8	18.4	35,722	16.7	13.2	1.8	1.7	7.2	6.3
Conoco Phillips	USD	53.0	0.9	3.4	7.6	17.9	12.5	21.5	5.6	63,315	130.4	35.9	2.2	2.2	9.2	7.3
Formosa Petrochemic	TWD	106.5	0.9	1.4	(0.5)	1.9	0.9	4.9	(4.9)	33,568	15.1	18.2	3.2	3.2	9.6	11.0
Andeavor	USD	110.2	0.4	4.2	5.2	12.7	38.5	38.3	26.0	17,286	16.0	13.6	1.7	1.7	9.1	7.3
Marathon Petroleum	USD	62.2	0.0	6.4	10.8	11.3	21.4	51.0	23.5	30,379	17.0	15.6	2.5	2.5	8.4	7.6
Devon Energy	USD	39.3	1.1	9.4	7.5	21.7	2.9	(3.1)	(14.0)	20,636	22.3	18.0	2.9	2.5	9.3	8.4
Hollyfrontier	USD	40.1	(0.3)	10.7	10.1	31.3	47.7	68.0	22.5	7,116	19.3	15.9	1.4	1.4	8.4	7.3
Phillips 66	USD	93.6	0.1	1.7	(0.1)	9.3	17.6	18.3	8.3	47,421	20.8	15.3	2.1	2.1	10.5	8.8
Murphy Oil	USD	27.6	(0.8)	7.9	3.7	7.3	7.4	2.0	(11.3)	4,763	#N/A N/A	124.3	1.1	1.1	5.2	4.8
JX Holdings	JPY	607.4	0.0	2.4	5.5	22.7	20.8	49.1	22.8	18,244	9.5	8.9	0.9	0.8	7.9	7.4
Idemitsu	JPY	3,425.0	0.0	4.3	9.8	30.1	(6.0)	45.3	10.3	6,244	7.7	7.7	0.9	0.8	8.8	8.5
Nesteoil	EUR	48.8	0.6	0.8	28.8	39.0	27.8	27.4	33.8	0	16.0	16.0	2.9	2.7	9.2	9.7
Ashland	USD	68.7	(0.1)	0.7	2.4	9.4	15.4	25.1	28.4	4,285	17.1	20.8	1.3	1.2	7.9	9.9
Fuchs Petrolub	EUR	48.6	0.2	0.0	(2.7)	2.3	1.3	26.5	21.9	7,367	25.6	24.1	5.0	4.5	14.7	13.9
SK이노베이션	KRW	209,000	2.2	1.5	5.0	21.2	20.1	33.5	42.7	17,300	8.3	7.9	1.1	1.0	5.1	4.6
S-Oil	KRW	127,000	0.4	(1.9)	(0.4)	12.9	27.0	58.0	49.9	12,800	12.5	9.5	2.2	2.0	9.6	7.0
GS	KRW	65,600	(0.2)	(1.1)	0.0	(10.7)	10.8	22.8	21.3	5,457	6.3	5.9	0.8	0.7	7.1	6.8
Average			**0.3**	**3.3**	**5.7**	**15.2**	**17.1**	**31.1**	**17.9**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임
* 국내업체의 multiple은 Dataguidepro 기준임

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Global peers

	Currency	11/03	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER 17E	PER 18E	PBR 17E	PBR 18E	EV/EBITDA 17E	EV/EBITDA 18E
E&P/Shale																
Exxon Mobil	USD	83	(0.4)	(0.6)	1.7	3.3	0.6	(0.6)	(7.8)	352,442	23.6	20.9	2.0	2.0	10.1	9.1
BP	GBP	517	(0.3)	3.8	6.3	12.2	15.7	14.5	1.4	133,722	23.2	17.7	1.4	1.4	6.6	5.9
Shell	EUR	2,435	0.0	4.6	6.0	11.9	20.7	19.5	8.6	265,474	17.5	15.9	1.4	1.3	6.9	6.4
Chevron	USD	115	(0.3)	1.3	(2.4)	5.1	7.7	9.1	(2.3)	218,409	28.5	23.3	1.5	1.5	8.2	7.1
Total	EUR	48	0.0	2.5	6.3	11.3	3.7	14.5	(0.5)	142,095	13.8	13.2	1.3	1.2	6.4	5.7
Sinopec	CNY	6	0.5	4.8	4.2	1.0	7.3	24.2	13.7	107,425	14.0	13.3	1.0	1.0	4.5	4.5
Petrochina	CNY	8	(0.8)	2.3	4.1	2.6	9.5	14.1	4.7	217,511	52.0	32.6	1.3	1.2	6.5	6.3
CNOOC	CNY	12	(0.3)	3.8	1.4	2.8	5.2	(5.8)	(10.3)	62,142	13.8	12.1	1.0	1.0	4.3	4.1
Gazprom	RUB	126	0.2	(0.0)	4.2	5.3	(7.3)	(10.0)	(18.5)	50,417	4.4	4.0	0.2	0.2	3.8	3.4
Rosneft	RUB	318	(0.2)	(1.3)	0.5	0.3	2.0	(7.1)	(21.1)	56,973	10.0	7.2	0.9	0.8	5.1	4.3
Anadarko	USD	50	0.2	1.4	0.5	13.1	(4.7)	(17.8)	(29.0)	27,090	#N/A N/A	#N/A N/A	1.9	1.9	7.6	6.7
Petrobras	BRL	17	0.2	(0.5)	6.0	27.3	19.6	5.0	13.9	68,588	14.9	10.5	0.7	0.7	5.7	5.2
Lukoil	USD	3,169	0.6	3.4	3.7	8.1	14.4	6.2	(8.1)	45,786	6.8	6.2	0.7	0.6	N/A	N/A
Kinder	USD	18	(0.3)	(1.6)	(5.9)	(12.3)	(12.5)	(11.0)	(14.3)	47,497	27.5	25.3	1.1	1.1	11.1	10.7
Statoil	NOK	165	(0.1)	1.1	3.1	10.7	16.9	25.7	4.4	66,870	16.5	17.8	1.7	1.7	3.5	3.5
BHP	AUD	28	1.2	4.1	5.9	8.0	19.3	22.2	10.5	107,382	15.1	17.3	1.9	1.8	6.1	6.5
PTT E&P	THB	89	1.7	4.4	(1.7)	2.0	(8.0)	8.5	(7.3)	10,679	13.4	12.2	0.9	0.8	3.3	3.1
Petronas gas	MYR	18	(1.1)	(2.2)	(2.1)	(4.9)	(6.8)	(19.7)	(16.9)	8,263	19.8	18.5	2.8	2.7	11.3	10.4
Chesapeake	USD	4	2.2	(0.8)	(12.8)	(16.9)	(32.5)	(30.7)	(46.7)	3,398	5.3	5.0	#N/A N/A	19.4	7.4	6.4
Noble Energy	USD	28	1.6	1.3	0.3	9.3	(6.2)	(24.2)	(25.6)	13,771	#N/A N/A	2,176.9	1.4	1.5	8.3	7.6
Average		**0**	**0.2**	**1.6**	**1.5**	**5.0**	**3.2**	**1.8**	**(7.6)**							
PV																
WACKER	EUR	140.9	2.1	7.9	13.9	36.4	44.4	77.5	42.5	8,523	27.0	24.6	2.3	2.2	8.0	7.5
GCL-Poly	HKD	1.3	1.5	0.0	20.7	55.8	39.6	27.6	44.1	3,192	9.7	8.3	0.9	0.9	6.7	6.2
SunPower	USD	8.6	4.7	22.9	19.3	(2.7)	21.3	35.0	30.7	1,206	#N/A N/A	#N/A N/A	1.6	1.5	20.2	12.0
Canadian Solar	USD	18.8	1.6	11.1	12.2	13.1	39.2	46.0	54.3	1,090	10.7	7.4	1.1	1.0	10.0	8.7
JA Solar	USD	7.6	(0.9)	3.0	0.8	25.0	6.1	32.0	60.5	363	7.8	14.6	1.8	1.8	3.4	3.3
Yingli	USD	2.3	1.8	(0.9)	(0.9)	(3.8)	(13.5)	(37.8)	(13.5)	41	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
First Solar	USD	59.9	3.5	3.8	26.8	26.6	76.6	73.5	86.6	6,252	24.4	50.8	1.0	1.2	11.3	11.8
한화큐셀	USD	8.2	0.6	3.4	(1.6)	1.4	24.2	(21.9)	0.5	683	91.1	45.6	#N/A N/A	#N/A N/A	7.5	7.8
OCI	KRW	124,000	2.5	10.2	21.0	30.3	56.4	32.5	57.6	2,647	14.0	15.5	0.9	0.8	7.7	6.4
웅진에너지	KRW	7,850	(0.6)	(1.4)	4.0	(2.7)	55.1	46.7	65.8	176	N/A	0.9	0.8	7.7	6.4	8.3
신성솔라에너지	KRW	1,765	2.3	1.4	(1.9)	(18.3)	(1.9)	(30.0)	(20.1)	273	N/A	0.8	7.7	6.4	8.3	7.3
Average			**1.7**	**5.6**	**10.4**	**14.6**	**31.6**	**25.5**	**37.2**							
Gas Company																
Towngas China	HKD	6.5	(0.9)	5.5	17.7	17.4	41.0	59.3	60.0	2,317	15.1	13.7	1.2	1.1	13.3	12.2
Kulun	HKD	7.2	(0.6)	(1.9)	(7.9)	(7.0)	3.9	23.4	23.4	7,408	11.4	10.4	1.3	1.2	5.7	5.6
Beijing Enterprise	HKD	45.8	(2.2)	(3.1)	6.4	13.1	23.0	21.4	24.8	7,400	8.8	8.1	0.9	0.8	15.9	14.7
ENN Energy	HKD	57.9	0.9	2.4	3.1	7.0	40.4	58.5	81.3	8,026	15.4	13.6	3.0	2.5	9.4	8.4
China Resources Gas	HKD	28.1	(0.4)	(2.4)	2.7	(6.3)	7.3	15.4	28.9	8,009	16.0	14.3	3.1	2.7	9.5	8.6
China Gas Holdings	HKD	23.4	(0.4)	(1.1)	(6.4)	22.4	96.9	97.9	122.0	14,869	20.1	17.0	4.6	3.9	15.8	13.5
Shenzen Gas	HKD	14.9	0.5	0.0	(2.4)	13.9	13.2	26.4	32.0	3,875	12.2	11.7	1.4	1.3	9.1	8.5
Shann Xi	CNY	8.2	(0.2)	(1.7)	(1.2)	(7.2)	(6.4)	(19.1)	(14.7)	1,372	17.3	15.5	1.6	1.5	#N/A N/A	#N/A N/A
Suntien	HKD	2.2	4.8	(3.9)	11.2	28.1	32.7	112.6	119.0	1,043	8.3	7.1	0.8	0.7	10.1	8.7
China Oil & Gas	HKD	0.5	1.9	1.9	(3.6)	0.0	(6.9)	(5.3)	(11.5)	403	9.3	8.1	0.9	0.8	6.2	5.6
Average			**0.3**	**(0.4)**	**2.0**	**8.1**	**24.5**	**39.1**	**46.5**							
EV																
LG화학	KRW	414,000	(1.4)	2.1	5.6	25.8	50.5	69.0	58.6	26,163	14.4	14.0	2.0	1.8	6.9	6.7
삼성SDI	KRW	220,000	(2.2)	12.8	10.8	25.4	60.0	134.3	101.8	13,543	23.2	14.2	1.4	1.2	24.3	15.3
Panasonic	JPY	1713.0	0.0	0.5	5.4	13.3	27.9	69.3	44.0	36,831	22.5	17.1	2.3	2.1	7.3	6.3
GS Yuasa	JPY	569.0	0.0	(5.3)	(5.0)	11.4	8.0	27.6	17.1	2,063	17.3	15.6	1.4	1.3	7.7	7.2
NEC	JPY	3030.0	0.0	(3.2)	(1.1)	0.0	7.4	6.3	(2.3)	6,918	18.2	16.9	0.9	0.9	7.1	6.6
BYD Auto	CNY	64.3	1.5	(1.4)	(5.9)	32.0	31.7	14.7	29.3	25,548	37.3	26.2	3.2	2.9	15.7	12.7
Tesla Motors	USD	306.1	2.3	(4.6)	(12.1)	(11.8)	(1.6)	63.3	43.2	51,444	#N/A N/A	#N/A N/A	10.6	10.4	121.9	29.9
Kandi Technologies	USD	6.9	4.5	0.7	3.0	74.7	55.1	55.1	40.8	331	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Average			**0.6**	**0.2**	**0.1**	**21.3**	**29.9**	**54.9**	**41.6**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임