SK Energy Daily

에너지/Commodity/정유화학. 손지우 I 3773-8827, jwshon@sk.com
R.A. 유승우 I 3773-9180, yswbest@sk.com

SK 증권

1. News Summary (3 page)

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News		Conclusion
WTI comment	예루살렘發 중동불안에 강세…WTI 1.2%↑	
Headline	[주간가격] 에틸렌, 플랫한 모습 보이며 CFR SEA 1,180$/mt로 마감	1월까지 수요는 견조하지만 유럽 및 중동 물량 유입으로 안정적일 것
News 1.	[주간가격] MEG, WoW 2$/mt 상하락CFR China 913$/mt로 마감	거래량이 부진한 가운데 폴리에스터 수요 약세 시즌을 선방했음
News 2.	[주간가격] BD, WoW 80$/mt 상승해 FOB Korea 1,090$/mt로 마감	춘절 리스탁킹 수요와 CNOOC의 BD 유닛 가동 지연으로 강세보일 것
News 3.	[주간가격] SBR, WoW 80$/mt 하락해 CFR NEA 1,520$/mt로 마감	BD 수요 증가, 공급 감소로 강세 전망되는 가운데 SBR도 강세일 것
News 4.	[주간가격] PX, WoW 5$/mt 하락해 FOB Korea 884$/mt로 마감	사우디 OSP가 올라 단기 유가 강세 보이며 PX도 강세 가능성 있음

2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
Refinery			%	%	%	%	%
WTI	$/bbl	57.4	1.2	(1.7)	1.0	20.8	11.4
Dubai	$/bbl	60.3	1.4	0.3	(2.5)	13.3	17.4
Gasoline	$/bbl	74.8	1.2	(1.4)	(2.5)	5.2	14.4
Diesel	$/bbl	73.9	2.0	0.8	1.6	6.6	19.1
Complex margin	$/bbl	8.0	0.2	(0.6)	0.8	(2.4)	0.8
1M lagging	$/bbl	5.9	(0.7)	(4.5)	(7.9)	(6.5)	(10.1)
Petrochemical			%	%	%	%	%
Naphtha	$/t	591	1.5	0.4	(0.4)	15.5	28.7
Butadiene	$/t	1,090	6.9	7.9	15.3	(25.9)	(35.1)
HDPE	$/t	1,290	0.0	(0.8)	3.2	7.9	14.2
MEG	$/t	913	0.0	(0.2)	0.0	(5.4)	10.9
PX	$/t	884	0.1	(0.6)	0.1	6.5	10.5
SM	$/t	1,308	(1.1)	2.1	3.6	(5.8)	6.3
Commodity			%	%	%	%	%
Natural Gas	$/mmbtu	2.77	0.3	(9.4)	(16.2)	(14.2)	(24.3)
Natural rubber	$/t	1,410	(2.1)	0.0	0.7	(13.5)	(20.8)
Cotton	C/lbs	73.7	(0.7)	(2.3)	6.8	(2.5)	4.1

*참고: 정제마진의 변동률은 %가 아닌 $/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
Petrochemical				%	%	%	%
Ethylene	12/04	$/t	1,200	0.4	6.2	0.8	23.1
Propylene	12/04	$/t	845	1.2	9.0	5.6	23.4
Benzene	12/04	$/t	893	1.7	9.2	9.2	15.9
Toluene	12/04	$/t	715	0.0	1.4	8.3	7.1
Xylene	12/04	$/t	695	0.0	4.9	9.4	6.1
PP	12/04	$/t	1,148	0.0	1.8	1.8	13.6
PVC	12/04	$/t	850	0.0	(4.5)	(9.1)	(12.4)
ABS	12/04	$/t	2,000	2.0	5.8	(0.5)	26.2
SBR	12/04	$/t	1,640	1.9	4.5	(3.0)	(10.9)
SM	12/04	$/t	1,328	1.7	11.1	(2.0)	12.5
BPA	12/04	$/t	1,733	3.3	(7.5)	(13.0)	6.1
Caustic	12/04	$/t	705	0.7	8.3	49.7	76.3
2-EH	12/04	$/t	1,030	1.0	3.0	4.0	22.6
Caprolactam	12/04	$/t	2,020	0.0	(6.9)	16.1	36.5
Solar				%	%	%	%
Polysilicon	12/06	$/kg	17.0	0.9	1.9	1.6	16.2
Module	12/06	$/W	0.31	0.0	(0.6)	(2.8)	(18.2)

3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
E&P			%	%	%	%	%
ExxonMobil	USD	82.7	0.1	(1.0)	(1.0)	4.9	(6.4)
Shell	EUR	2,358	0.6	(0.3)	(4.1)	10.3	12.8
Petrochina	CNY	8.06	0.1	(1.2)	(5.2)	(0.2)	6.3
Gazprom	RUB	132.6	(0.3)	(0.3)	0.2	10.2	(13.4)
Petrobras	BRL	15.4	0.6	(1.7)	(9.4)	4.4	(2.2)
Refinery							
Phillips66	USD	99.6	1.7	2.0	5.3	17.5	13.6
Valero	USD	87.6	2.3	4.1	7.3	26.0	28.1
JX	JPY	656.9	0.8	1.5	4.2	22.8	31.4
Neste Oil	EUR	51.0	0.5	(2.1)	4.6	41.6	35.4

	Unit	Price	1D	1W	1M	3M	12M
Petrochemical			%	%	%	%	%
BASF	EUR	94.0	0.6	0.9	(2.7)	11.7	9.9
DowDuPont	USD	70.7	(0.9)	(0.4)	(0.1)	9.1	23.2
SABIC	SAR	101.5	0.0	0.9	2.1	1.9	7.1
Formosa Pla.	TWD	93.0	0.0	0.2	0.8	(4.1)	1.6
Shin-Etsu	JPY	11,915	2.3	(1.5)	(4.9)	24.3	30.6
Renewable							
Wacker	EUR	142.9	2.4	5.1	3.6	28.6	54.3
First Solar	USD	70.02	2.3	16.1	13.3	49.3	111.1
GCL-Poly	HKD	1.26	6.8	0.8	(10.0)	41.6	22.3
Tesla Motors	USD	315.1	1.2	2.8	3.5	(8.2)	63.9

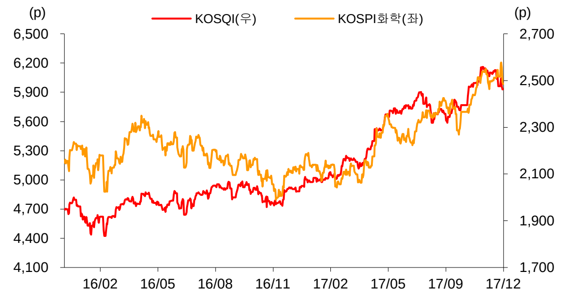
4. Coverage Summary

	12/08	1D	1W	1M	3M	6M	12M	투자의견	TP	%	P/E	P/B
KOSPI	2,464	0.1	(0.5)	(3.5)	5.1	4.2	23.7				* 추정치는 12M fwd 기준임	
KOSPI화학	5,986	(0.3)	(1.2)	(2.4)	5.3	8.1	21.7				* 모든 coverage 업체의 실적은 연결기준임	
LG화학	398,500	0.4	(3.3)	(2.6)	7.0	37.7	63.3	매수	400,000	0.4	12.62	2.08
롯데케미칼	357,000	0.0	(0.3)	(3.1)	(11.5)	1.1	2.1	매수	410,000	14.8	5.61	1.23
한화케미칼	29,900	0.0	3.5	(4.6)	(16.1)	3.5	21.3	매수	39,000	30.4	5.04	0.83
금호석유화학	86,200	(0.1)	(5.2)	17.0	9.5	14.0	14.0	매수	100,000	16.0	14.61	1.60
KCC	382,000	(2.7)	0.1	(7.2)	0.8	(7.6)	3.7	매수	450,000	17.8	21.20	0.56
OCI	120,500	0.8	0.0	(2.4)	19.3	35.7	60.2	매수	120,000	(0.4)	15.30	0.92
SKC	40,550	1.2	(1.0)	2.3	5.1	35.2	30.4	매수	45,000	11.0	11.20	1.11
SK이노베이션	203,000	0.2	0.2	(6.2)	8.8	29.3	33.6	매수	210,000	3.4	8.19	1.09
S-Oil	119,000	0.4	0.0	(6.3)	(1.7)	23.6	42.0	매수	140,000	17.6	12.87	2.25
GS	60,200	(0.3)	(0.8)	(9.9)	(9.7)	(14.2)	9.5	매수	80,000	32.9	5.71	0.89
SK가스	95,500	(2.0)	(1.0)	(0.2)	(10.3)	(20.1)	(16.6)	매수	130,000	36.1	7.22	0.71
포스코대우	17,600	(1.9)	(3.0)	(15.2)	(16.2)	(25.6)	(32.7)	매수	25,000	42.0	9.86	0.76
LG상사	27,000	(1.6)	(2.2)	(13.7)	(5.8)	(17.7)	(16.1)	매수	38,000	40.7	9.83	0.87
한국전력	38,000	(2.2)	0.1	(1.3)	(7.8)	(12.8)	(13.2)	매수	55,000	44.7	7.29	0.31
한국가스공사	41,850	(2.3)	(3.5)	(2.0)	(4.6)	(16.6)	(7.9)	매수	60,000	43.4	8.55	0.54

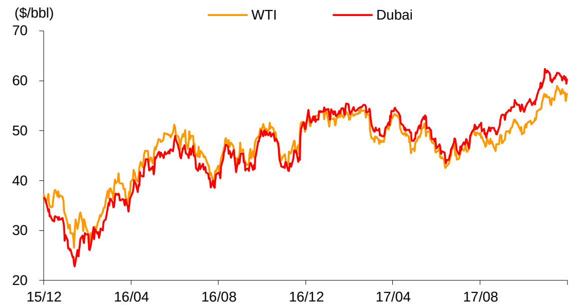
에너지/Commodity/정유화학, 손지우 I 3773-8827, jwshon@sk.com
R.A. 유승우 I 3773-9180, yswbest@sk.com
SK증권

Key Chart

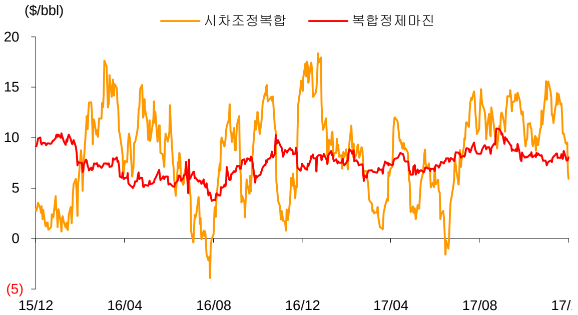
KOSPI/KOSPI화학



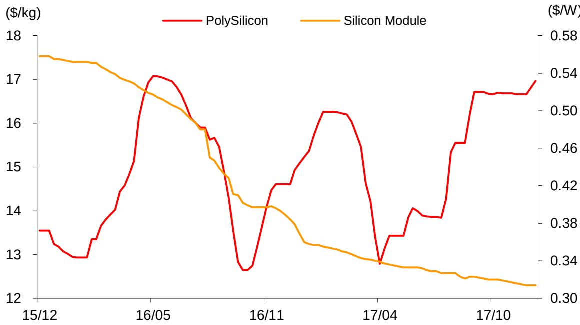
WTI/Dubai



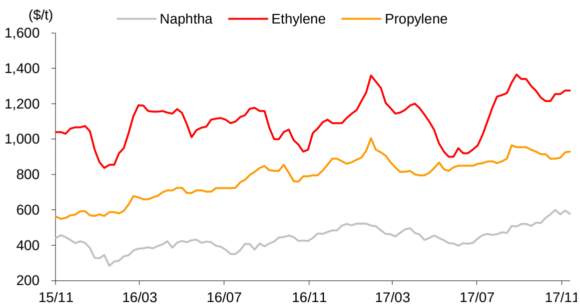
Complex & 1M lagging margin



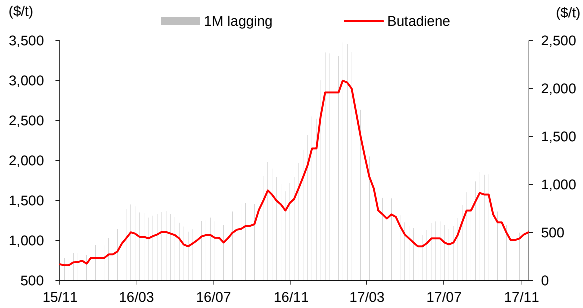
Polysilicon & Module prices



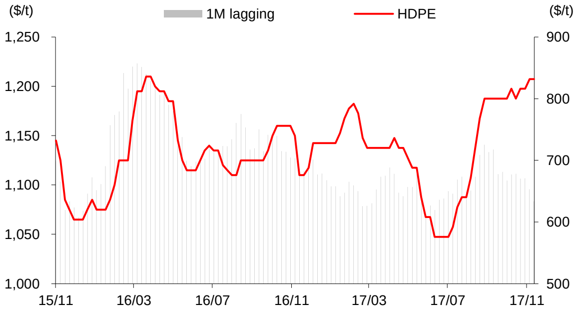
Naphtha/Ethylene/Propylene prices



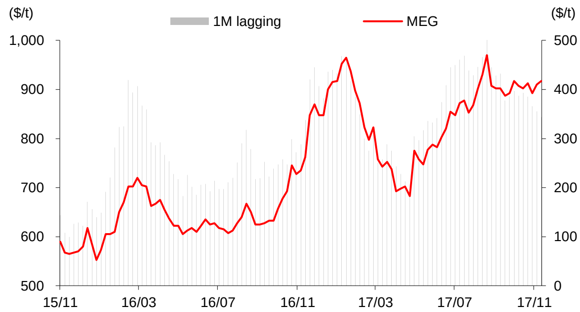
Butadiene price & 1M lagging naphtha spread



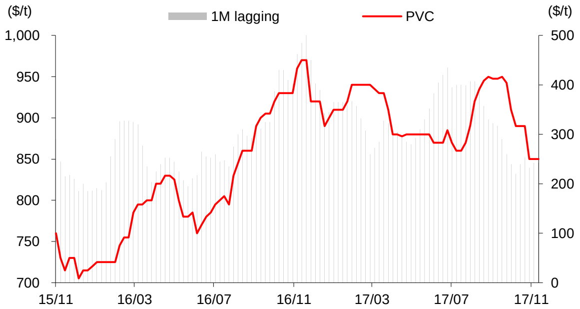
HDPE price & 1M lagging naphtha spread



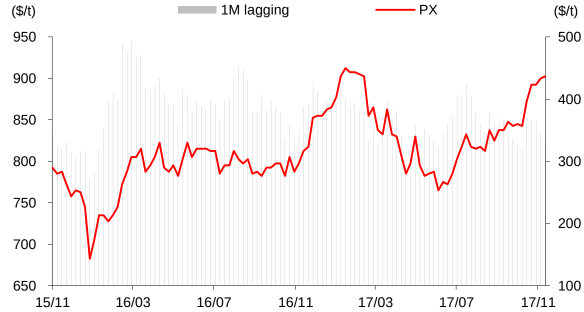
MEG price & 1M lagging naphtha spread



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, 플랫한 모습 보이며 CFR SEA 1,180$/mt로 마감
결론	1월까지 수요는 견조하지만 유럽 및 중동 물량 유입으로 안정적일 것
세부	
	1) SM 마진 호조와 중국 MTO 공장 가동률 저하로 에틸렌 수요는 안정적
	2) 관계자, "이러한 트렌드는 1월까지 유사하게 이어질 것으로 보임"
	3) 수요 견조에도 불구하고 deepsea 물량의 유입으로 가격은 플랫했음
	4) 아시아로 12월 중순에 유럽에서 1만톤, 사우디에서 1.3만톤 유입 예정
	5) 1월까지 수요는 견조하지만 유럽 및 중동 물량 유입으로 안정적일 것

WTI Comment	(출처: 연합뉴스)
제목	예루살렘發 중동불안에 강세…WTI 1.2%↑
상승	트럼프 미국 대통령이 예루살렘을 이스라엘 수도로 공식 인정
요인	생산 차질이 빚어지고 공급과잉이 다소 해소된다는 전망
하락	
요인	

Issue 1	(출처: Platts)
제목	[주간가격] MEG, WoW 2$/mt 상하락CFR China 913$/mt로 마감
결론	거래량이 부진한 가운데 폴리에스터 수요 약세 시즌을 선방했음
세부	
	1) 관계자, "폴리에스터 수요 약세 시즌이었지만 시장은 안정적이었음"
	2) 월요일 923$/mt, 화요일 926$/mt까지 상승하며 변동성을 키웠었음
	3) 많은 공급자들이 추가 공급을 줄였고 美로부터의 deepsea 물량도 감소
	4) 동중국항 재고량은 WoW 4.5만톤 감소해 49만톤을 기록함
	5) 거래량이 부진한 가운데 폴리에스터 수요 약세 시즌을 선방했음

Issue 2	(출처: Platts)
제목	[주간가격] BD, WoW 80$/mt 상승해 FOB Korea 1,090$/mt로 마감
결론	춘절 리스탁킹 수요와 CNOOC의 BD 유닛 가동 지연으로 강세보일 것
세부	
	1) 관계자, "브라질, 유럽, 미국으로부터 적어도 5척의 배가 BD 싣어옴"
	2) 전체 물량은 3.49만톤 가량이며 1월 중순부터 2월 초에 하역할 것
	3) Sinopec은 동중국 BD 오퍼 가격을 1,191$/mt 수준으로 5.6% 올림
	4) 리스탁킹 수요에 더불어 CNOOC의 16.5만톤 BD 유닛 가동 연기됨
	5) 춘절 리스탁킹 수요와 CNOOC의 BD 유닛 가동 지연으로 강세보일 것

Issue 3	(출처: Platts)
제목	[주간가격] SBR, WoW 80$/mt 하락해 CFR NEA 1,520$/mt로 마감
결론	BD 수요 증가, 공급 감소로 강세 전망되는 가운데 SBR도 강세일 것
세부	
	1) 중국은 과잉 공급이지만 동남아 생산자들은 가동률을 내리지 않았음
	2) Sinopec의 10만톤 규모 SBR 공장이 1Q18 말이 아닌 1월 초 가동 예정
	3) Shandong 지방 천연고무 창고에서 불이 나 3.6만톤의 천연고무 소실
	4) 동남아에서는 원재료인 BD 가격이 올라 높은 가격을 원하고 있음
	5) BD 수요 증가, 공급 감소로 강세 전망되는 가운데 SBR도 강세일 것

Issue 4	(출처: Platts)
제목	[주간가격] PX, WoW 5$/mt 하락해 FOB Korea 884$/mt로 마감
결론	사우디 OSP가 올라 단기 유가 강세 보이며 PX도 강세 가능성 있음
세부	
	1) 다운스트림 선물 시장이 약세를 보이며 주 중반 하락세를 시현함
	2) 한편 CFR China PTA는 WoW 10$/mt 오르며 715$/mt를 기록함
	3) 롯데케미칼이 울산의 PX 공장을 내년 약 한달간 정기보수로 셧다운함
	4) Shaoxing Huabin의 1.4백만톤/년 규모의 PTA 공장 셧다운 지속됨
	5) 사우디 OSP가 올라 단기 유가 강세 보이며 PX도 강세 가능성 있음

Issue 5	(출처: Platts)
제목	[주간가격] PTA, WoW 10$/mt 상승해 CFR China 715$/mt로 마감
결론	공장 가동률이 올라가며 일시적으로 센티가 견조한 것으로 판단
세부	
	1) 중국 내 수입 PTA 수요가 약해 buy와 sell idea의 spread가 컸음
	2) 중국 내수 카고 물량이 많아 수입 PTA 수요가 약세를 보인 것임
	3) 중국 PTA 공장 가동률은 평균 90% 수준으로 아시아 평균 70%를 상회
	4) 중국 내수 카고 물량은 CFR China 690$/mt 수준에 거래가 이뤄짐
	5) 공장 가동률이 올라가며 일시적으로 센티가 견조한 것으로 판단

Issue 6	(출처: PVinsights)
제목	[주간가격] 수요 감소 우려감 속 소폭 상승한 폴리실리콘
결론	급락을 방지하기 위해 일시적으로 수요를 발생시키는 것임
세부	
	1) 중국 폴리실리콘 가격은 중국 내 수요 감소 영향으로 상승폭 제한됨
	2) 현재 중국 내 폴리실리콘 수요는 mono-crystalline의 capa 확장 때문
	3) Mono-crystalline 수요 회복에 대비한 잉곳 재고 축적 수요도 원인
	4) 해외 폴리실리콘 가격은 별다른 이유 없었음
	5) 급락을 방지하기 위해 일시적으로 수요를 발생시키는 것임

Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
F/X	**USD/EUR**	0.849	0.849	0.841	0.863	0.831	0.892	0.942	0.951	0.901	0.904	0.889
	Change, %		0.0	1.0	(1.5)	2.2	(4.8)	(9.8)	(10.6)	(5.8)	(6.0)	(4.5)
	USD/JPY	113.5	113.1	112.2	113.9	107.8	110.0	114.0	117.0	121.1	108.8	112.1
	Change, %		0.3	1.2	(0.3)	5.2	3.1	(0.5)	(3.0)	(6.3)	4.3	1.2
	USD/KRW	1,092.5	1,093.5	1,086.4	1,115.5	1,127.4	1,122.1	1,159.0	1,205.8	1,131.2	1,160.5	1,134.0
	Change, %		(0.1)	0.6	(2.1)	(3.1)	(2.6)	(5.7)	(9.4)	(3.4)	(5.9)	(3.7)
Agriculture	**Corn**	340.0	338.8	344.8	348.3	344.3	385.8	346.5	352.0	376.8	358.5	360.1
	Change, %		0.4	(1.4)	(2.4)	(1.2)	(11.9)	(1.9)	(3.4)	(9.8)	(5.2)	(5.6)
	Soybean	989.8	992.0	994.3	988.0	956.5	938.0	1,027.0	996.5	945.4	987.5	976.9
	Change, %		(0.2)	(0.5)	0.2	3.5	5.5	(3.6)	(0.7)	4.7	0.2	1.3
	Wheat	392.0	394.3	414.5	426.8	413.8	449.3	390.8	408.0	508.1	436.4	437.2
	Change, %		(0.6)	(5.4)	(8.1)	(5.3)	(12.7)	0.3	(3.9)	(22.9)	(10.2)	(10.3)
	Rice	12.1	12.1	12.5	11.1	12.5	11.2	9.8	9.4	11.1	10.3	11.0
	Change, %		(0.5)	(3.2)	8.3	(3.1)	7.4	23.5	29.0	9.1	16.7	9.5
	Oats	226.3	229.0	247.3	269.5	233.3	245.0	214.0	228.5	250.2	196.3	252.8
	Change, %		(1.2)	(8.5)	(16.0)	(3.0)	(7.7)	5.7	(1.0)	(9.6)	15.3	(10.5)
MYR/mt	**Palm Oil**	2,379.0	2,410.0	2,495.0	2,772.0	2,771.0	2,670.0	3,168.0	3,218.0	2,190.3	2,653.8	2,810.5
	Change, %		(1.3)	(4.6)	(14.2)	(14.1)	(10.9)	(24.9)	(26.1)	8.6	(10.4)	(15.4)
	Cocoa	1,892.0	1,885.0	2,040.0	2,216.0	1,972.0	1,963.0	2,262.0	2,126.0	3,091.6	2,854.0	2,013.0
	Change, %		0.4	(7.3)	(14.6)	(4.1)	(3.6)	(16.4)	(11.0)	(38.8)	(33.7)	(6.0)
	Cotton	73.7	74.2	75.4	68.6	75.6	76.6	71.4	70.7	63.3	65.6	73.3
	Change, %		(0.7)	(2.3)	7.4	(2.5)	(3.7)	3.2	4.3	16.5	12.4	0.5
	Sugar	14.1	14.3	15.0	14.8	14.1	14.3	19.5	19.5	13.1	18.2	15.9
	Change, %		(1.8)	(6.2)	(5.3)	(0.3)	(2.0)	(27.8)	(28.0)	6.9	(22.6)	(11.7)
	Coffee	120.6	120.9	127.6	125.8	129.4	126.4	137.6	137.1	132.6	136.1	133.7
	Change, %		(0.2)	(5.4)	(4.1)	(6.8)	(4.6)	(12.4)	(12.0)	(9.1)	(11.4)	(9.8)
Energy	**WTI**	57.4	56.7	58.4	56.8	47.5	45.6	50.8	53.7	48.8	43.4	50.5
	Change, %		1.2	(1.7)	1.0	20.8	25.7	12.8	6.8	17.4	32.2	13.6
	Brent	63.4	62.2	63.7	63.5	53.8	47.9	53.9	56.8	53.7	45.1	54.2
	Change, %		1.9	(0.5)	(0.1)	17.9	32.5	17.6	11.6	18.1	40.6	16.9
	Natural Gas	2.8	2.8	3.1	3.2	2.9	3.0	3.7	3.7	2.6	2.6	3.0
	Change, %		0.3	(9.4)	(12.7)	(4.1)	(8.5)	(25.0)	(25.6)	5.4	8.6	(8.8)
	Ethanol	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.5
	Change, %		1.1	(1.6)	(8.1)	(13.4)	(13.9)	(18.9)	(17.2)	(12.0)	(12.3)	(11.9)
	RBOB Gasoline	171.7	170.0	174.2	182.1	164.8	149.2	150.5	166.5	163.6	140.0	162.3
	Change, %		1.0	(1.4)	(5.7)	4.2	15.1	14.1	3.1	4.9	22.6	5.8
	Coal	97.6	97.3	97.0	98.0	98.5	79.3	84.0	88.4	59.0	65.5	87.5
	Change, %		0.3	0.6	(0.5)	(0.9)	23.0	16.1	10.4	65.5	49.0	11.5
Metal	**Gold**	1,248.5	1,247.3	1,280.5	1,281.4	1,346.5	1,278.1	1,170.9	1,152.3	1,160.6	1,248.5	1,257.9
	Change, %		0.1	(2.5)	(2.6)	(7.3)	(2.3)	6.6	8.4	7.6	0.0	(0.7)
	Silver	15.9	15.7	16.4	17.0	18.0	17.4	17.0	15.9	15.7	17.1	17.1
	Change, %		0.8	(3.6)	(6.9)	(11.7)	(9.1)	(6.8)	(0.4)	0.9	(7.3)	(7.4)
	Copper	6,571.0	6,564.0	6,833.0	6,855.0	6,693.0	5,729.5	5,782.0	5,535.5	5,503.1	4,872.0	6,149.5
	Change, %		0.1	(3.8)	(4.1)	(1.8)	14.7	13.6	18.7	19.4	34.9	6.9
	Nickel	706.4	710.1	731.4	822.3	734.0	567.9	751.8	682.0	759.5	646.4	675.6
	Change, %		(0.5)	(3.4)	(14.1)	(3.8)	24.4	(6.0)	3.6	(7.0)	9.3	4.6
	Zinc	3,082.5	3,090.0	3,249.0	3,192.0	3,031.0	2,467.0	2,689.0	2,576.0	1,941.9	2,097.5	2,867.3
	Change, %		(0.2)	(5.1)	(3.4)	1.7	24.9	14.6	19.7	58.7	47.0	7.5
	Lead	2,448.8	2,433.0	2,550.5	2,505.0	2,237.3	2,077.0	2,272.3	2,003.5	1,791.2	1,868.3	2,303.7
	Change, %		0.6	(4.0)	(2.2)	9.5	17.9	7.8	22.2	36.7	31.1	6.3
	Aluminum	14,055.0	14,030.0	14,475.0	15,705.0	15,910.0	13,685.0	13,370.0	12,765.0	12,184.0	12,373.5	14,562.1
	Change, %		0.2	(2.9)	(10.5)	(11.7)	2.7	5.1	10.1	15.4	13.6	(3.5)
	Cobalt	74,500.0	69,900.0	66,775.0	60,040.0	60,850.0	56,350.0	30,704.0	32,734.0	28,444.4	25,480.1	54,797.6
	Change, %		6.6	11.6	24.1	22.4	32.2	142.6	127.6	161.9	192.4	36.0
	HR Coil	635.0	630.0	629.0	610.0	638.0	591.0	570.0	633.0	461.5	519.3	618.6
	Change, %		0.8	1.0	4.1	(0.5)	7.4	11.4	0.3	37.6	22.3	2.6
	Scrap	349.0	349.0	349.0	325.0	380.0	355.0	275.0	302.0	252.9	275.7	343.6
	Change, %		0.0	0.0	7.4	(8.2)	(1.7)	26.9	15.6	38.0	26.6	1.6

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

SK Energy Daily

에너지/Commodity/정유화학. 손지우 | 3773-8827, jwshon@sk.com
R.A. 유승우 | 3773-9180, yswbest@sk.com

SK증권

Refining Price Data

Daily Price		12/08	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	**WTI**	57.4	56.7	58.4	56.8	47.5	45.8	51.5	53.7	48.8	43.4	50.5
	Change, %		*1.2*	*(1.7)*	*1.0*	*20.8*	*25.2*	*11.4*	*6.8*	*17.6*	*32.3*	*13.7*
	Dubai	60.3	59.4	60.1	61.8	53.2	46.5	51.3	53.8	50.8	41.3	52.5
	Change, %		*1.4*	*0.3*	*(2.5)*	*13.3*	*29.7*	*17.4*	*11.9*	*18.7*	*45.9*	*14.7*
Crude Oil Product	**Gasoline(휘발유)**	74.8	73.9	75.9	76.7	71.0	60.7	65.4	69.8	69.5	56.3	67.5
	Change, %		*1.2*	*(1.4)*	*(2.5)*	*5.2*	*23.2*	*14.4*	*7.0*	*7.5*	*32.9*	*10.7*
	Kerosene(등유)	74.0	72.6	73.8	74.5	68.2	56.4	63.1	66.4	64.7	52.9	64.6
	Change, %		*2.0*	*0.2*	*(0.6)*	*8.5*	*31.1*	*17.2*	*11.4*	*14.3*	*39.9*	*14.6*
	Diesel(경유)	73.9	72.5	73.4	72.8	69.3	56.9	62.1	65.5	64.8	52.1	65.0
	Change, %		*2.0*	*0.8*	*1.6*	*6.6*	*30.0*	*19.1*	*12.9*	*14.1*	*41.9*	*13.8*
	Bunker-C	54.4	53.9	56.4	57.3	50.1	45.3	49.4	52.1	45.3	35.5	49.2
	Change, %		*1.0*	*(3.6)*	*(5.1)*	*8.6*	*20.1*	*10.2*	*4.5*	*20.2*	*53.1*	*10.6*
	Naphtha	64.8	63.5	63.9	64.9	54.7	44.6	49.9	53.5	52.6	42.6	53.0
	Change, %		*2.0*	*1.3*	*(0.2)*	*18.5*	*45.3*	*29.9*	*21.1*	*23.1*	*52.0*	*22.2*
Dubai Spread	**Gasoline(휘발유)**	14.5	14.4	15.8	14.9	17.9	14.2	14.0	16.0	18.7	14.9	15.0
	Change		*0.1*	*(1.3)*	*(0.4)*	*(3.4)*	*0.3*	*0.5*	*(1.5)*	*(4.2)*	*(0.4)*	*(0.5)*
	Kerosene(등유)	13.7	13.1	13.7	12.7	15.0	10.0	11.8	12.6	14.0	11.6	12.0
	Change		*0.6*	*0.0*	*1.1*	*(1.3)*	*3.8*	*1.9*	*1.1*	*(0.2)*	*2.2*	*1.7*
	Diesel(경유)	13.7	13.0	13.3	11.0	16.2	10.4	10.8	11.7	14.0	10.8	12.4
	Change		*0.6*	*0.4*	*2.7*	*(2.5)*	*3.3*	*2.9*	*2.0*	*(0.3)*	*2.9*	*1.3*
	Bunker-C	(5.9)	(5.6)	(3.6)	(4.5)	(3.1)	(1.2)	(2.0)	(1.8)	(5.5)	(5.8)	(3.4)
	Change		*(0.3)*	*(2.2)*	*(1.4)*	*(2.8)*	*(4.7)*	*(3.9)*	*(4.1)*	*(0.3)*	*(0.1)*	*(2.5)*
	Naphtha	4.5	4.1	3.9	3.1	1.5	(1.9)	(1.5)	(0.4)	1.8	1.3	0.5
	Change		*0.4*	*0.6*	*1.4*	*3.0*	*6.4*	*6.0*	*4.9*	*2.7*	*3.2*	*4.0*
Refining Margin	**Simple(단순)**	2.4	2.3	3.5	2.2	4.9	3.4	3.2	3.8	3.3	1.9	3.2
	Change		*0.1*	*(1.1)*	*0.2*	*(2.4)*	*(1.0)*	*(0.8)*	*(1.4)*	*(0.9)*	*0.5*	*(0.7)*
	Complex(복합)	8.0	7.8	8.7	7.2	10.4	7.3	7.2	8.3	9.3	7.0	8.0
	Change		*0.2*	*(0.6)*	*0.8*	*(2.4)*	*0.8*	*0.8*	*(0.2)*	*(1.2)*	*1.1*	*0.1*
	Complex(lagging)	5.9	6.6	10.4	13.8	12.4	5.4	16.0	18.0	7.3	8.5	8.8
	Change		*(0.7)*	*(4.5)*	*(7.9)*	*(6.5)*	*0.5*	*(10.1)*	*(12.1)*	*(1.3)*	*(2.6)*	*(2.9)*

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

SK Energy Daily

에너지/Commodity/정유화학, 손지우 | 3773-8827, jwshon@sk.com
R.A. 유승우 | 3773-9180, yswbest@sk.com
SK증권

Petrochemical Price Data

Daily Price			12/08	12/07	12/06	12/05	12/04	12/01	11/30	11/29	11/28	11/27
Spot Price	**Naphtha**	CFR Japan	590.8	581.8	585.6	579.5	591.0	588.5	588.5	593.0	598.0	596.5
	Ethylene	CFR SE Asia	1,080.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,175.0	1,175.0	1,175.0	1,175.0
	Propylene	FOB Korea	903.0	903.0	903.0	899.0	899.0	897.0	899.0	901.0	901.0	899.0
	Butadiene	FOB Korea	1,090.0	1,020.0	1,010.0	1,010.0	1,010.0	1,010.0	1,010.0	1,010.0	1,010.0	1,000.0
	HDPE	CFR FE Asia	1,290.0	1,290.0	1,290.0	1,305.0	1,305.0	1,300.0	1,300.0	1,300.0	1,300.0	1,280.0
	LDPE	CFR FE Asia	1,240.0	1,240.0	1,240.0	1,245.0	1,250.0	1,250.0	1,250.0	1,250.0	1,250.0	1,245.0
	LLDPE	CFR FE Asia	1,170.0	1,170.0	1,170.0	1,175.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,170.0
	MEG	CFR China	913.0	913.0	920.0	926.0	923.0	915.0	915.0	912.0	910.0	905.0
	PP	CFR FE Asia	1,130.0	1,130.0	1,140.0	1,140.0	1,120.0	1,120.0	1,110.0	1,120.0	1,115.0	1,115.0
	PX	CFR China	884.0	883.0	888.2	885.7	889.8	889.0	877.7	883.2	883.7	885.7
	PTA	CFR China	715.0	715.0	715.0	715.0	710.0	705.0	705.0	700.0	700.0	700.0
	Benzene	FOB Korea	902.0	910.0	908.0	885.0	875.0	873.0	869.5	879.5	893.5	879.5
	Toluene	FOB Korea	698.0	695.0	695.0	699.0	701.0	689.0	698.0	702.0	707.5	702.5
	Xylene	FOB Korea	703.0	703.0	707.0	707.0	713.0	711.0	699.0	702.5	702.0	699.0
	SM	FOB Korea	1,308.0	1,322.0	1,318.0	1,299.0	1,287.0	1,281.0	1,297.0	1,302.0	1,297.0	1,284.0

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	**Naphtha**	CFR Japan	579.0	595.5	574.0	470.0	464.0	465.5	484.5	493.0	399.5	486.4
	Change, %			*(2.8)*	*0.9*	*23.2*	*24.8*	*24.4*	*19.5*	*17.4*	*44.9*	*19.0*
	Ethylene	CFR SE Asia	1,200.0	1,195.0	1,130.0	1,190.0	1,030.0	975.0	990.0	1,103.7	1,040.9	1,078.9
	Change, %			*0.4*	*6.2*	*0.8*	*16.5*	*23.1*	*21.2*	*8.7*	*15.3*	*11.2*
	Propylene	CFR SE Asia	845.0	835.0	775.0	800.0	770.0	685.0	815.0	770.0	705.7	879.6
	Change, %			*1.2*	*9.0*	*5.6*	*9.7*	*23.4*	*3.7*	*9.7*	*19.7*	*(3.9)*
	Butadiene	CFR SE Asia	1,050.0	1,025.0	950.0	1,325.0	925.0	1,600.0	2,100.0	877.5	1,116.8	1,507.9
	Change, %			*2.4*	*10.5*	*(20.8)*	*13.5*	*(34.4)*	*(50.0)*	*19.7*	*(6.0)*	*(30.4)*
	Benzene	CFR SE Asia	892.5	877.5	817.5	817.5	750.0	770.0	822.5	690.0	646.7	834.2
	Change, %			*1.7*	*9.2*	*9.2*	*19.0*	*15.9*	*8.5*	*29.3*	*38.0*	*7.0*
	Toluene	CFR SE Asia	715.0	715.0	705.0	660.0	650.0	667.5	690.0	700.8	630.5	687.0
	Change, %			*0.0*	*1.4*	*8.3*	*10.0*	*7.1*	*3.6*	*2.0*	*13.4*	*4.1*
	Xylene	CFR SE Asia	695.0	695.0	662.5	635.0	632.5	655.0	675.0	699.3	627.7	665.5
	Change, %			*0.0*	*4.9*	*9.4*	*9.9*	*6.1*	*3.0*	*(0.6)*	*10.7*	*4.4*
Spread	**Ethylene**	-Naphtha	621.0	599.5	556.0	720.0	566.0	509.5	505.5	610.6	641.4	592.6
	Change, %			*3.6*	*11.7*	*(13.8)*	*9.7*	*21.9*	*22.8*	*1.7*	*(3.2)*	*4.8*
	Propylene	-Naphtha	266.0	239.5	201.0	330.0	306.0	219.5	330.5	277.0	306.2	393.2
	Change, %			*11.1*	*32.3*	*(19.4)*	*(13.1)*	*21.2*	*(19.5)*	*(4.0)*	*(13.1)*	*(32.4)*
	Butadiene	-Naphtha	471.0	429.5	376.0	855.0	461.0	1,134.5	1,615.5	384.5	717.3	1,021.5
	Change, %			*9.7*	*25.3*	*(44.9)*	*2.2*	*(58.5)*	*(70.8)*	*22.5*	*(34.3)*	*(53.9)*
	Benzene	-Naphtha	313.5	282.0	243.5	347.5	286.0	304.5	338.0	197.0	247.2	347.8
	Change, %			*11.2*	*28.7*	*(9.8)*	*9.6*	*3.0*	*(7.2)*	*59.2*	*26.8*	*(9.9)*
	Toluene	-Naphtha	136.0	119.5	131.0	190.0	186.0	202.0	205.5	207.8	231.0	200.6
	Change, %			*13.8*	*3.8*	*(28.4)*	*(26.9)*	*(32.7)*	*(33.8)*	*(34.5)*	*(41.1)*	*(32.2)*
	Xylene	-Naphtha	116.0	99.5	88.5	165.0	168.5	189.5	190.5	206.3	228.2	179.1
	Change, %			*16.6*	*31.1*	*(29.7)*	*(31.2)*	*(38.8)*	*(39.1)*	*(43.8)*	*(49.2)*	*(35.2)*

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

에너지/Commodity/정유화학, 손지우 I 3773-8827, jwshon@sk.com
R.A. 유승우 I 3773-9180, yswbest@sk.com
SK 증권

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	HDPE	CFR SE Asia	1,207.5	1,207.5	1,187.5	1,137.5	1,077.5	1,110.0	1,142.5	1,230.1	1,134.6	1,138.3
	Change, %			0.0	1.7	6.2	12.1	8.8	5.7	(1.8)	6.4	6.1
	MEG	CFR SE Asia	917.5	910.0	902.5	930.0	877.5	762.5	847.5	780.8	660.8	846.7
	Change, %			0.8	1.7	(1.3)	4.6	20.3	8.3	17.5	38.9	8.4
	PVC	CFR SE Asia	850.0	850.0	890.0	935.0	860.0	970.0	920.0	820.8	823.4	901.9
	Change, %			0.0	(4.5)	(9.1)	(1.2)	(12.4)	(7.6)	3.6	3.2	(5.8)
	PP	CFR SE Asia	1,147.5	1,147.5	1,127.5	1,127.5	1,087.5	1,010.0	1,032.5	1,109.8	978.4	1,094.3
	Change, %			0.0	1.8	1.8	5.5	13.6	11.1	3.4	17.3	4.9
	2-EH	CFR Korea	1,030.0	1,020.0	1,000.0	990.0	960.0	840.0	865.0	930.1	772.4	963.9
	Change, %			1.0	3.0	4.0	7.3	22.6	19.1	10.7	33.4	6.9
	ABS	CFR SE Asia	2,000.0	1,960.0	1,890.0	2,010.0	1,850.0	1,585.0	1,635.0	1,431.1	1,347.1	1,829.3
	Change, %			2.0	5.8	(0.5)	8.1	26.2	22.3	39.8	48.5	9.3
	SBR	CFR SE Asia	1,640.0	1,610.0	1,570.0	1,690.0	1,490.0	1,840.0	2,000.0	1,332.1	1,483.0	2,003.2
	Change, %			1.9	4.5	(3.0)	10.1	(10.9)	(18.0)	23.1	10.6	(18.1)
	SM	CFR SE Asia	1,327.5	1,305.0	1,195.0	1,355.0	1,150.0	1,180.0	1,205.0	1,100.7	1,064.6	1,246.9
	Change, %			1.7	11.1	(2.0)	15.4	12.5	10.2	20.6	24.7	6.5
	Caustic	FOB NEA	705.0	700.0	651.0	471.0	467.5	400.0	422.5	296.8	316.6	479.2
	Change, %			0.7	8.3	49.7	50.8	76.3	66.9	137.6	122.7	47.1
	PX	CFR SE Asia	902.5	900.0	872.5	812.5	832.5	812.5	855.0	842.9	790.4	840.2
	Change, %			0.3	3.4	11.1	8.4	11.1	5.6	7.1	14.2	7.4
	PO	CFR China	1,732.5	1,677.5	1,872.5	1,992.5	1,542.5	1,632.5	1,562.5	1,683.4	1,396.8	1,580.0
	Change, %			3.3	(7.5)	(13.0)	12.3	6.1	10.9	2.9	24.0	9.7
	Caprolactam	CFR SE Asia	2,020.0	2,020.0	2,170.0	1,740.0	1,760.0	1,480.0	1,850.0	1,581.5	1,344.9	1,923.4
	Change, %			0.0	(6.9)	16.1	14.8	36.5	9.2	27.7	50.2	5.0
	PTA	CFR SE Asia	715.0	712.5	670.0	657.5	657.5	620.0	642.5	648.0	613.7	663.7
	Change, %			0.4	6.7	8.7	8.7	15.3	11.3	10.3	16.5	7.7
Spread	HDPE		628.5	612.0	613.5	667.5	613.5	644.5	658.0	737.1	735.1	651.9
	Change, %			2.7	2.4	(5.8)	2.4	(2.5)	(4.5)	(14.7)	(14.5)	(3.6)
	MEG		338.5	314.5	328.5	460.0	413.5	297.0	363.0	287.8	261.3	360.4
	Change, %			7.6	3.0	(26.4)	(18.1)	14.0	(6.7)	17.6	29.6	(6.1)
	PVC		271.0	254.5	316.0	465.0	396.0	504.5	435.5	327.8	423.9	415.6
	Change, %			6.5	(14.2)	(41.7)	(31.6)	(46.3)	(37.8)	(17.3)	(36.1)	(34.8)
	PP		568.5	552.0	553.5	657.5	623.5	544.5	548.0	616.8	578.9	608.0
	Change, %			3.0	2.7	(13.5)	(8.8)	4.4	3.7	(7.8)	(1.8)	(6.5)
	2-EH		451.0	424.5	426.0	520.0	496.0	374.5	380.5	437.0	372.9	477.6
	Change, %			6.2	5.9	(13.3)	(9.1)	20.4	18.5	3.2	21.0	(5.6)
	ABS		1,421.0	1,364.5	1,316.0	1,540.0	1,386.0	1,119.5	1,150.5	938.1	947.6	1,342.9
	Change, %			4.1	8.0	(7.7)	2.5	26.9	23.5	51.5	50.0	5.8
	SBR	BD spread	590.0	585.0	620.0	365.0	565.0	240.0	(100.0)	454.7	366.2	495.3
	Change, %			0.9	(4.8)	61.6	4.4	145.8	(690.0)	29.8	61.1	19.1
	SM		748.5	709.5	621.0	885.0	686.0	714.5	720.5	607.7	665.1	760.6
	Change, %			5.5	20.5	(15.4)	9.1	4.8	3.9	23.2	12.5	(1.6)
	Caustic											
	Change, %											
	PX		323.5	304.5	298.5	342.5	368.5	347.0	370.5	349.9	390.9	353.8
	Change, %			6.2	8.4	(5.5)	(12.2)	(6.8)	(12.7)	(7.5)	(17.2)	(8.6)
	PO	propylene sprea	887.5	842.5	1,097.5	1,192.5	772.5	947.5	747.5	913.4	691.1	700.4
	Change, %			5.3	(19.1)	(25.6)	14.9	(6.3)	18.7	(2.8)	28.4	26.7
	Caprolactam	benzene spreac	1,127.5	1,142.5	1,352.5	922.5	1,010.0	710.0	1,027.5	891.6	698.2	1,089.2
	Change, %			(1.3)	(16.6)	22.2	11.6	58.8	9.7	26.5	61.5	3.5
	PTA	px spread	83.3	82.5	59.3	88.8	74.8	51.3	44.0	58.0	60.4	75.6
	Change, %			0.9	40.5	(6.2)	11.4	62.4	89.2	43.5	37.8	10.1

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

Global peers

	Currency	12/08	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	70.7	(0.9)	(0.4)	(0.1)	9.1	10.6	23.2	23.6	165,508	21.1	17.4	1.6	1.7	11.8	10.1
Eastman	USD	92.2	0.7	0.2	1.8	8.7	13.3	18.5	22.6	13,249	13.1	11.3	2.6	2.5	9.4	8.6
BASF	EUR	94.0	0.6	0.9	(2.7)	11.7	11.6	9.9	6.4	101,458	15.2	15.1	2.6	2.4	8.2	8.0
Akzo Nobel	EUR	74.2	1.9	(2.0)	(6.4)	(4.9)	(2.0)	25.6	25.0	22,048	18.1	17.3	3.1	3.1	9.9	9.5
Arkema	EUR	101.5	0.1	(0.6)	(7.4)	7.8	8.0	7.8	9.2	9,047	14.3	13.3	1.9	1.8	6.6	6.3
Lanxess	EUR	63.0	1.1	0.6	(9.4)	0.2	(7.4)	1.8	1.0	6,778	16.3	14.7	2.2	2.0	7.2	8.8
Sumitomo Chemical	JPY	785	1.2	(1.1)	(7.6)	20.0	33.5	35.1	41.2	11,448	9.9	9.8	1.4	1.3	7.4	7.2
Mitsubishi Chemical	JPY	1,242	2.6	2.3	2.1	22.2	42.0	60.2	63.8	16,473	9.5	9.2	1.4	1.3	6.5	6.3
Shin-Etsu Chemical	JPY	11,915	2.3	(1.5)	(4.9)	24.3	18.6	30.6	31.4	45,354	22.6	19.5	2.2	2.0	10.1	8.6
Asahi Kasei	JPY	1,434	1.4	2.0	(4.9)	12.3	27.2	35.0	40.7	17,718	14.7	14.6	1.6	1.5	7.6	7.4
JSR	JPY	2,258	0.1	3.6	0.3	7.7	19.2	24.5	22.5	4,498	15.5	14.9	1.3	1.2	8.5	7.8
Nitto Denko	JPY	10,410	3.0	(6.0)	(8.6)	11.1	14.6	22.6	16.1	15,934	18.5	16.9	2.4	2.2	8.5	7.8
SABIC	SAR	101.5	0.0	0.9	2.1	1.9	2.4	7.1	10.9	81,194	15.1	14.4	1.8	1.8	7.5	7.4
Yansab	SAR	59.5	0.0	(1.7)	5.6	5.4	7.7	18.4	9.2	8,917	14.8	13.8	2.3	2.2	9.3	9.0
Formosa Plastics	TWD	93.0	0.0	0.2	0.8	(4.1)	4.1	1.6	4.3	19,712	13.5	14.2	1.8	1.7	19.2	19.2
Formosa Fiber	TWD	94.4	0.3	0.1	1.5	(1.6)	4.8	(4.6)	(2.0)	18,423	12.0	12.8	1.7	1.6	10.4	10.7
Nan Ya Plastics	TWD	74.5	0.0	(0.7)	(0.7)	(1.3)	3.5	5.5	4.6	19,673	14.3	14.5	1.7	1.7	15.0	15.4
Sinopec Shanghai	CNY	6.48	(0.5)	2.0	(1.4)	1.9	(0.9)	6.2	0.6	9,188	12.4	11.8	2.5	2.2	6.7	6.7
Sinopec Yizheng(Fibe	CNY	2.85	1.4	(4.4)	(7.8)	(10.9)	(22.1)	(29.6)	(30.5)	5,497	#N/A N/A	52.8	5.4	5.5	27.3	14.2
Reliance	INR	921	(1.1)	1.2	3.7	12.7	38.3	80.6	70.2	92,839	17.0	14.6	1.9	1.7	11.7	9.5
Industries Qatar	QAR	88.5	0.0	(0.3)	(5.8)	0.0	(10.6)	(19.2)	(24.7)	14,502	15.6	13.2	1.6	1.5	57.9	46.3
PTT Chemical	THB	82.3	1.5	3.8	2.5	6.5	17.5	26.1	30.6	11,366	10.2	10.4	1.4	1.3	5.4	5.3
Petronas	MYR	7.4	0.3	0.3	(0.7)	(0.4)	2.9	7.5	6.3	14,545	15.1	15.2	2.0	1.9	8.7	8.6
LG화학	KRW	398,500	0.4	(3.3)	(2.6)	7.0	37.7	58.1	52.7	25,737	14.8	14.0	1.9	1.7	6.6	6.1
롯데케미칼	KRW	357,000	0.0	(0.3)	(3.1)	(11.5)	1.1	(1.7)	(3.3)	11,195	5.3	5.3	1.1	0.9	3.6	3.2
한화케미칼	KRW	29,900	0.0	3.5	(4.6)	(16.1)	3.5	17.5	21.1	4,508	4.9	5.3	0.8	0.7	6.6	6.4
금호석유	KRW	86,200	(0.1)	(5.2)	17.0	9.5	14.0	13.4	5.1	2,403	14.8	13.7	1.6	1.4	10.3	9.2
SKC	KRW	40,550	1.2	(1.0)	2.3	5.1	35.2	31.0	22.9	1,392	10.8	9.7	1.0	0.9	9.6	8.1
국도화학	KRW	66,400	0.2	2.2	12.9	31.5	23.9	18.6	20.9	353	0.0	0.0	0.0	0.0	0.0	0.0
효성	KRW	7,650	(3.3)	(5.0)	(1.0)	15.9	16.6	46.6	12.5	4,305	8.0	8.0	1.2	1.1	7.2	6.4
Average			**0.5**	**(0.3)**	**(0.9)**	**6.1**	**12.3**	**19.3**	**17.2**							
Refinery																
Valero	USD	87.6	2.3	4.1	7.3	26.0	38.7	28.1	28.2	38,332	17.4	13.7	1.9	1.9	7.5	6.5
Conoco Phillips	USD	51.6	2.0	(0.3)	(3.6)	16.0	19.7	3.6	2.9	61,653	93.8	32.1	2.1	2.1	8.8	6.8
Formosa Petrochemic	TWD	108.0	(0.5)	0.0	1.4	0.9	1.9	(3.1)	(3.6)	34,256	15.0	18.3	3.2	3.2	9.5	11.6
Andeavor	USD	111.0	1.9	6.3	(0.1)	9.3	24.1	22.1	27.0	17,322	15.5	13.2	1.7	1.8	9.0	7.2
Marathon Petroleum	USD	64.8	1.2	3.0	2.4	21.2	21.2	29.3	28.6	31,625	16.6	15.4	2.6	2.5	8.4	7.6
Devon Energy	USD	38.1	2.4	(2.0)	(5.5)	20.9	20.8	(20.3)	(16.7)	19,995	21.3	17.0	2.8	2.4	9.0	7.9
Hollyfrontier	USD	45.7	0.8	3.3	8.0	41.0	86.0	34.0	39.5	8,100	18.9	16.3	1.6	1.6	8.6	7.6
Phillips 66	USD	99.6	1.7	2.0	5.3	17.5	28.6	13.6	15.2	50,446	21.6	15.8	2.3	2.2	10.8	8.9
Murphy Oil	USD	28.4	1.2	(2.7)	(2.1)	21.2	18.2	(14.2)	(8.6)	4,908	#N/A N/A	190.9	1.1	1.1	5.3	4.6
JX Holdings	JPY	656.9	0.8	1.5	4.2	22.8	35.2	31.4	32.8	19,830	7.8	8.0	0.9	0.8	7.0	6.8
Idemitsu	JPY	3,940.0	2.6	1.2	12.9	41.6	23.3	32.6	26.9	7,219	7.1	7.0	1.0	0.9	6.6	6.4
Nesteoil	EUR	51.0	0.5	(2.1)	4.6	41.6	46.7	35.4	39.7	15,373	16.3	16.0	3.0	2.8	9.4	9.8
Ashland	USD	70.1	(0.6)	(4.6)	7.5	13.7	5.0	24.6	31.2	4,364	17.4	21.2	1.3	1.3	7.9	9.9
Fuchs Petrolub	EUR	43.9	0.9	1.9	(8.1)	(9.1)	(11.1)	15.2	10.0	6,915	23.1	21.7	4.5	4.1	13.6	12.9
SK이노베이션	KRW	203,000	0.2	0.2	(6.2)	8.8	29.3	31.0	38.6	17,173	8.0	7.7	1.0	0.9	4.9	4.5
S-Oil	KRW	119,000	0.4	0.0	(6.3)	(1.7)	23.6	40.5	40.5	12,257	11.8	9.0	2.1	1.8	9.1	6.7
GS	KRW	60,200	(0.3)	(0.8)	(9.9)	(9.7)	(14.2)	7.1	11.3	5,117	5.8	5.5	0.7	0.7	6.8	6.4
Average			**1.0**	**0.6**	**0.7**	**16.6**	**23.3**	**18.3**	**20.2**							

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

에너지/Commodity/정유화학. 손지우 I 3773-8827, jwshon@sk.com
R.A. 유승우 I 3773-9180, yswbest@sk.com

Global peers

	Currency	12/08	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	0.1	(1.0)	(1.0)	4.9	2.5	(6.4)	(8.4)	350,239	22.8	20.1	2.0	1.9	9.9	8.9
BP	GBP	493	0.9	0.2	(6.0)	10.5	8.0	3.3	(3.3)	130,552	22.2	16.8	1.4	1.4	6.4	5.8
Shell	EUR	2,358	0.6	(0.3)	(4.1)	10.3	14.5	12.8	5.1	263,203	16.8	15.0	1.3	1.3	6.8	6.3
Chevron	USD	120	0.2	0.3	2.8	8.3	15.3	4.1	1.9	227,773	29.4	22.9	1.6	1.6	8.4	7.2
Total	EUR	47	(0.9)	(0.8)	(3.9)	6.9	3.3	2.4	(3.5)	139,784	13.2	12.7	1.3	1.2	6.2	5.5
Sinopec	CNY	6	(0.7)	0.2	(3.1)	1.2	(1.8)	13.8	11.5	104,957	13.8	12.8	1.0	1.0	4.5	4.3
Petrochina	CNY	8	0.1	(1.2)	(5.2)	(0.2)	4.3	6.3	1.4	211,241	50.7	31.2	1.2	1.2	6.6	6.1
CNOOC	CNY	10	0.2	(4.5)	(12.2)	(6.7)	(9.8)	(19.9)	(18.2)	59,947	12.8	10.9	1.0	1.0	4.1	3.8
Gazprom	RUB	133	(0.3)	(0.3)	0.2	10.2	11.1	(13.4)	(14.2)	52,935	4.3	4.2	0.3	0.2	4.0	3.7
Rosneft	RUB	294	0.4	0.6	(11.8)	(6.7)	(4.5)	(21.8)	(27.1)	52,498	10.7	7.2	0.8	0.7	5.4	4.6
Anadarko	USD	48	1.3	(1.6)	(6.3)	17.1	2.8	(31.8)	(31.3)	26,220	#N/A N/A	#N/A N/A	1.9	1.8	7.5	6.6
Petrobras	BRL	15	0.6	(1.7)	(9.4)	4.4	19.5	(2.2)	3.2	61,926	13.4	9.2	0.6	0.6	5.0	4.6
Lukoil	USD	3,389	0.4	1.3	1.6	15.8	23.9	0.9	(1.8)	48,652	6.8	6.3	0.7	0.7	N/A	N/A
Kinder	USD	18	2.5	2.2	(1.2)	(7.1)	(5.2)	(16.1)	(14.1)	47,497	27.8	25.4	1.1	1.1	11.1	10.7
Statoil	NOK	167	0.8	(0.7)	(2.3)	13.1	13.4	10.3	5.3	66,337	15.9	16.6	1.7	1.7	3.5	3.4
BHP	AUD	27	0.1	(1.5)	(4.6)	(0.4)	16.6	4.3	8.4	103,448	14.0	16.7	1.8	1.8	5.8	6.2
PTT E&P	THB	94	0.3	1.4	(1.1)	3.9	6.9	3.0	(2.9)	11,377	15.2	12.9	0.9	0.9	3.5	3.2
Petronas gas	MYR	16	(0.6)	0.8	(6.2)	(12.0)	(16.1)	(24.8)	(24.9)	7,758	17.9	16.7	2.5	2.4	10.2	9.5
Chesapeake	USD	4	(0.5)	(10.0)	(7.3)	1.1	(22.4)	(51.6)	(47.6)	3,344	5.2	5.1	#N/A N/A	#N/A N/A	7.4	6.4
Noble Energy	USD	27	4.0	(0.2)	(5.2)	9.4	(3.6)	(31.9)	(29.2)	13,109	#N/A N/A	489.8	1.4	1.4	7.9	7.3
Average		0	**0.5**	**(0.8)**	**(4.3)**	**4.2**	**3.9**	**(7.9)**	**(9.5)**							
PV																
WACKER	EUR	142.9	2.4	5.1	3.6	28.6	51.7	54.3	44.5	8,758	31.7	22.9	2.3	2.2	8.0	7.4
GCL-Poly	HKD	1.3	6.8	0.8	(10.0)	41.6	57.5	22.3	35.5	3,001	8.7	8.1	0.9	0.8	6.5	6.0
SunPower	USD	8.3	3.0	6.0	(4.4)	(2.9)	2.0	9.9	26.2	1,164	#N/A N/A	#N/A N/A	1.6	1.6	16.2	12.3
Canadian Solar	USD	17.3	0.8	(4.0)	(8.6)	5.8	33.9	36.4	41.6	1,001	11.5	9.4	0.9	0.9	9.7	11.0
JA Solar	USD	7.4	0.8	2.2	(7.1)	(3.9)	13.3	42.6	56.1	354	8.9	14.0	1.7	1.7	4.1	3.9
Yingli	USD	2.0	11.2	(3.4)	(8.7)	(14.2)	5.9	(35.8)	(23.5)	36	#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	70.0	2.3	16.1	13.3	49.3	85.2	111.1	118.2	7,312	28.1	48.9	1.2	1.3	15.2	14.3
한화큐셀	USD	7.3	(1.6)	(1.9)	(18.5)	(1.5)	5.8	(14.7)	(10.5)	608	63.5	33.2	#N/A N/A	#N/A N/A	8.6	8.1
OCI	KRW	120,500	0.8	0.0	(2.4)	19.3	35.7	58.6	53.1	2,629	13.7	15.0	0.9	0.8	7.5	6.2
웅진에너지	KRW	8,940	3.4	1.5	15.7	(4.2)	38.4	130.4	88.8	205	N/A	0.9	0.8	7.5	6.2	8.0
신성솔라에너지	KRW	1,995	(1.7)	(5.0)	15.3	(2.4)	3.1	13.7	(9.7)	316	N/A	0.8	7.5	6.2	8.0	8.0
Average			**2.6**	**1.6**	**(1.1)**	**10.5**	**30.2**	**39.0**	**38.2**							
Gas Company																
Towngas China	HKD	6.1	1.8	(2.7)	(6.9)	15.8	25.4	49.1	48.8	2,153	13.7	12.4	1.1	1.1	12.6	11.6
Kulun	HKD	7.2	0.7	6.0	(0.1)	(4.1)	7.0	22.8	24.3	7,457	11.5	10.5	1.3	1.2	5.8	5.6
Beijing Enterprise	HKD	44.8	3.3	0.3	(1.5)	4.2	16.1	26.0	22.2	7,244	8.6	7.9	0.9	0.8	15.7	13.7
ENN Energy	HKD	56.1	(0.6)	0.8	(3.7)	3.2	28.1	63.6	75.9	7,783	15.0	13.1	2.9	2.5	9.1	8.1
China Resources Gas	HKD	29.0	0.0	(1.4)	0.2	5.6	18.4	28.3	33.0	8,263	16.5	14.7	3.2	2.8	9.7	8.9
China Gas Holdings	HKD	24.0	0.2	(1.0)	1.5	10.9	84.6	131.2	128.1	15,277	19.7	16.4	4.8	3.9	15.3	12.9
Shenzen Gas	HKD	14.0	1.3	(0.8)	(5.0)	(1.5)	1.4	22.7	24.2	3,649	11.5	11.0	1.3	1.2	8.8	8.2
Shann Xi	CNY	8.0	1.5	(2.0)	(3.8)	(7.5)	(8.6)	(19.7)	(16.5)	1,347	16.9	15.2	1.6	1.5	#N/A N/A	#N/A N/A
Suntien	HKD	1.9	4.5	(4.6)	(12.7)	2.8	19.4	77.9	85.0	881	6.9	6.0	0.7	0.6	9.7	8.3
China Oil & Gas	HKD	0.6	3.6	0.0	7.4	1.8	3.6	(6.5)	(4.9)	433	9.5	8.1	1.0	0.9	6.4	5.7
Average			**1.6**	**(0.5)**	**(2.5)**	**3.1**	**19.5**	**39.6**	**42.0**							
EV																
LG화학	KRW	398,500	0.4	(3.3)	(2.6)	7.0	37.7	58.1	52.7	25,737	13.9	13.4	1.9	1.7	6.6	6.4
삼성SDI	KRW	209,500	0.7	(2.3)	(5.2)	8.8	31.3	121.7	92.2	13,180	21.3	13.0	1.3	1.2	23.8	14.9
Panasonic	JPY	1597.0	2.7	(3.2)	(9.4)	8.8	7.4	25.2	34.3	34,510	20.5	15.7	2.2	2.0	6.8	5.9
GS Yuasa	JPY	558.0	1.5	(2.6)	(3.8)	5.1	10.9	15.3	14.8	2,033	17.1	15.3	1.3	1.3	7.7	7.0
NEC	JPY	3015.0	0.6	0.9	(0.7)	5.4	4.0	(6.9)	(2.7)	6,918	15.7	17.7	0.9	0.9	7.4	6.8
BYD Auto	CNY	59.8	1.2	(5.7)	(11.3)	19.9	18.3	12.7	20.3	23,969	34.9	24.9	3.0	2.7	15.1	12.2
Tesla Motors	USD	315.1	1.2	2.8	3.5	(8.2)	(14.8)	63.9	47.5	52,963	#N/A N/A	#N/A N/A	11.2	11.1	131.7	31.7
Kandi Technologies	USD	7.3	0.7	(0.7)	(0.7)	89.6	75.9	41.7	49.0	351	#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			**1.1**	**(1.8)**	**(3.8)**	**17.0**	**21.3**	**41.5**	**38.5**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임