

IRON ORE PORT STOCK INDEX (IOPI)

December 19, 2018		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	Price	Change	Change %	MTD	YTD <sup>2</sup>	Low <sup>2</sup>	High <sup>2</sup>	Price	Change	Change %	MTD	YTD <sup>2</sup>	Low <sup>2</sup>	High <sup>2</sup>
IOPI62	62% Fe Fines	569	4	0.7%	552	508	443	603	73.61	0.53	0.7%	71.33	67.52	61.36	77.89
IOPI58	58% Fe Fines	396	1	0.3%	387	360	304	419	50.07	0.13	0.3%	48.86	46.48	40.67	52.71
IOPI65	65% Fe Fines	694	3	0.4%	684	659	541	784	90.62	0.39	0.4%	89.22	88.56	75.83	101.71

IRON ORE SEABORNE INDEX (IOSI)

December 19, 2018		CFR Qingdao, USD/dry tonne						
Index	Fe Content	Price	Change	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>
IOSI62	62% Fe Fines	71.40	0.45	0.6%	68.87	68.83	62.95	86.20
IOSI65	65% Fe Fines	85.90	0.40	0.5%	85.42	93.36	83.20	101.50

MARKET COMMENTARY

Low iron ore inventories at the steel mills lead to a tranche of trades today, with prices for some product rising higher. Another smog alert in Tangshan meant that further restrictions has been implemented from Dec 19 to 24, as the Tangshan government is far from achieving their air quality targets. Seaborne trade continues to tickle along, though floating spot deals remain preferred.

IRON ORE PORT LUMP INDEX (IOPLI)

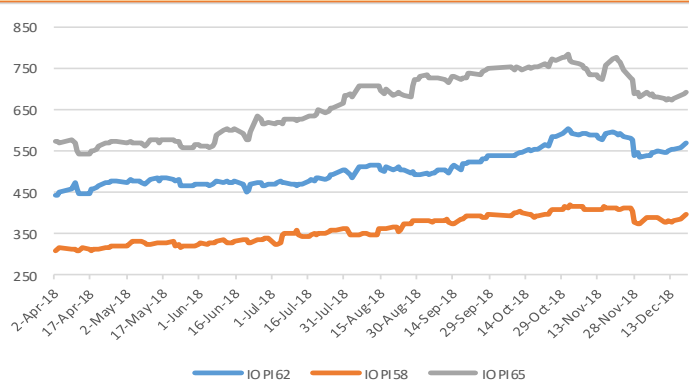
Week Ending December 14		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>
IOPLI62	62.5% Fe Lump	743	-8	-1.1%	747	651	565	789	93.39	-1.16	-1.2%	93.97	83.79	76.63	98.50

IRON ORE DOMESTIC CONCENTRATE SPOT PRICE ASSESSMENTS AND COMPOSITE INDEX

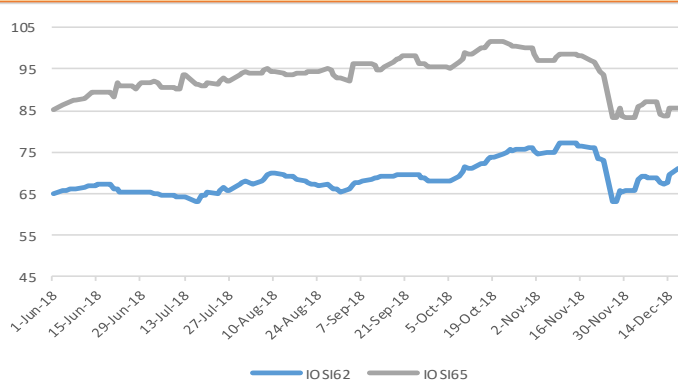
Week Ending December 14, 2018				RMB/tonne (excluding tax) <sup>4</sup>				USD/tonne (excluding tax) <sup>4</sup>			
Province	Region	Product	Basis	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>
Hebei	Hanxing	66% Fe Concentrate	Dry	651	1.1%	579	718	94.55	1.04%	84.09	104.28
Hebei	Qian'an	65% Fe Concentrate	Dry	705	2.2%	630	815	102.39	2.12%	91.50	118.37
Liaoning	Anshan	65% Fe Concentrate	Wet	535	0.0%	445	565	77.70	-0.05%	64.63	82.06
Shandong	Zibo	65% Fe Concentrate	Dry	740	0.0%	620	815	107.47	-0.05%	90.05	118.37
Week Ending December 14, 2018				This week	Change %	Low <sup>5</sup>	High <sup>5</sup>				
China Mines Concentrate Composite Index RMB/WT				610.24	0.2%	534.50	676.26				

<sup>1</sup> Exchange rate applied: RMB/USD = 6.8869 Since March 1 <sup>3</sup> Since June 1 <sup>4</sup> Weekly exchange rate applied: RMB/USD 6.9208 <sup>5</sup> Last 12 months

IRON ORE PORT INDEX, FOT QINGDAO (RMB/WT)



IRON ORE SEABORNE INDEX, CFR QINGDAO (USD/DMT)



IRON ORE PORT STOCK INDEX MONTHLY, QUARTERLY AND YEAR-TO-DATE AVERAGES

December 19, 2018		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	August	September	October	November	MTD	QTD	YTD <sup>2</sup>	August	September	October	November	MTD	QTD	YTD <sup>2</sup>
IOPI62	62% Fe Fines	505	513	564	564	552	569	508	64.29	63.41	65.25	72.55	71.33	73.27	67.52
IOPI58	58% Fe Fines	363	385	401	401	387	400	360	44.14	44.86	45.84	50.47	48.86	50.38	46.48
IOPI65	65% Fe Fines	701	732	760	760	684	734	659	82.19	85.29	92.13	99.05	89.22	95.59	88.56

IRON ORE SEABORNE INDEX MONTHLY, QUARTERLY AND YEAR-TO-DATE AVERAGES

December 19, 2018		CFR Qingdao, USD/dry tonne						
Index	Fe Content	August	September	October	November	MTD	QTD	YTD <sup>3</sup>
IOSI62	62% Fe Fines	67.89	68.79	72.31	72.91	68.87	71.74	68.83
IOSI65	65% Fe Fines	94.04	96.48	98.97	94.05	85.42	94.07	93.36

FREIGHT RATES

December 18 2018		FREIGHT RATES - DRY BULK US\$/wet tonne				
Route	Designation	Change	Change %	Low <sup>5</sup>	High <sup>5</sup>	
W. Australia - Qingdao	C5	8.62	-0.12	-1.35%	5.109	10.002
Tubarao - Qingdao	C3	17.34	-0.09	-0.52%	12.705	24.76

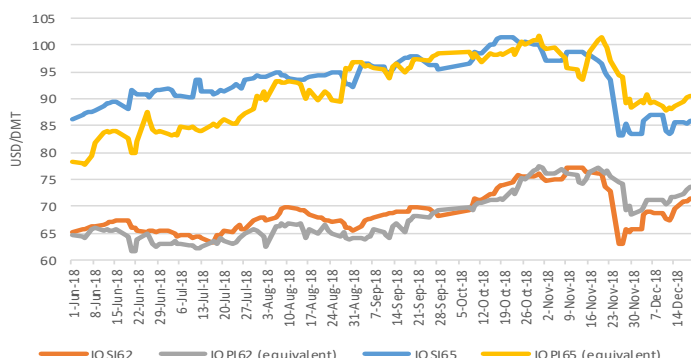
IRON ORE PORT LUMP INDEX MONTHLY, QUARTERLY AND YEAR-TO-DATE AVERAGES

Week Ending December 14		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	August	September	October	November	MTD	QTD	YTD <sup>3</sup>	August	September	October	November	MTD	QTD	YTD <sup>2</sup>
IOPLI62	62.5% Fe Lump	652	695	720	771	747	751	651	81.74	87.49	89.65	96.21	93.97	93.79	83.79

Daily Iron Ore Index Report

December 19, 2018

IRON ORE INDEX COMPARISONS



CHINA DOMESTIC COMPOSITE MINES INDEX (RMB/Wet Tonne, including VAT)



IRON ORE BRAND SPOT PRICE ASSESSMENTS

December 19, 2018	PORT STOCK INDEX (RMB/WT)			December 19, 2018	SEABORNE INDEX (USD/DMT)		
	Price	Change	Diff to IOPI62		Price	Change	Diff to IOSI62
Roy Hill	533	4	-36	Roy Hill	66.91	0.90	-4.49
SIMEC Fines	458	4	-111	SIMEC Fines	63.59	1.60	-7.81
PB Fines	549	3	-20	PB Fines	71.01	0.60	-0.39
Newman Fines	550	2	-19	Newman Fines	73.52	0.58	2.12
MAC Fines	529	5	-40	MAC Fines	67.34	0.80	-4.06
Jimblebar Blended Fines	499	4	-70	Jimblebar Blended Fines	62.46	2.35	-8.94
Carajas Fines	689	4	120	Carajas Fines	85.17	0.26	13.77
Brazilian SSF	520	4	-49	Brazilian SSF	74.52	1.38	3.12
Brazilian Blend Fines	567	3	-2	Brazilian Blend Fines	75.15	0.76	3.75
RTX Fines	478	4	-91	RTX Fines	63.81	1.70	-7.59

December 19, 2018	PORT STOCK INDEX (RMB/WT)		
	Price	Change	Diff to IOPI58
SSF	353	1	-43
FMG Blended Fines	399	1	3
Robe River	414	1	18
Western Fines	366	1	-30
Atlas Fines	351	1	-45
Yandi	447	1	51

IRON ORE INDEX NORMALISATION DIFFERENTIALS

Port Stock Index Product Differentials (RMB/wet tonne)				Seaborne Index Product Differentials (USD/dry tonne)			
	Applicable range	Value	Change		Applicable range	Value	Change
1% Fe	High Grade Fe 60 - 63%	12.00	0.00	1% Fe	High Grade Fe 60 - 63%	2.75	0.00
	High Grade Fe 63 - 64%	40.00	0.00		High Grade Fe 63 - 64%	2.00	0.00
	High Grade Fe 64 - 65%	40.00	0.00		High Grade Fe 64 - 65%	2.00	0.00
	High Grade Fe 65 - 65.5%	40.00	0.00		High Grade Fe 65 - 65.5%	2.00	0.00
	Low Grade Fe	15.00	0.00				
1% Alumina	High Fe Grade Al <2.25%	34.00	0.00	1% Alumina	High Fe Grade Al <2.25%	4.50	-0.25
	High Fe Grade Al 2.25-4%	53.00	0.00		High Fe Grade Al 2.25-4%	0.25	0.00
	Low Fe Grade Al <2.25%	83.00	0.00				
	Low Fe Grade Al 2.25-4%	14.00	0.00				
1% Silica	High Fe Grade Si <4%	2.00	0.00	1% Silica	High Fe Grade Si <4%	1.50	0.00
	High Fe Grade Si 4-6.5%	41.00	0.00		High Fe Grade Si 4 - 6.5%	1.00	-0.50
	Low Fe Grade	13.00	0.00				
0.01% Phosphorus	High Fe Grade 0.09%<P<0.115%	4.00	0.00	0.01% Phosphorus	High Fe Grade 0.09%<P<0.115%	0.25	0.00
	High Fe Grade 0.115%<P<0.15%	3.00	0.00		High Fe Grade 0.115%<P<0.15%	1.75	-0.50
	Low Fe Grade 0.09%<P<0.1%	2.00	0.00				

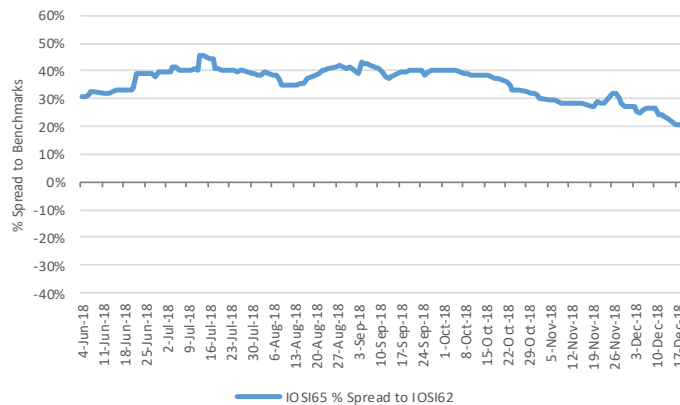
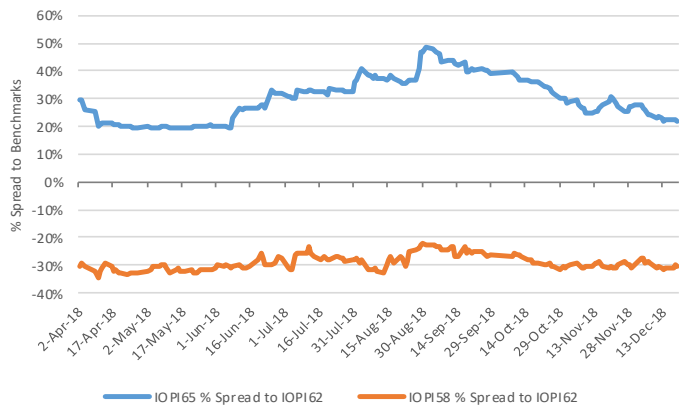
Port Stock Differentials to Qingdao Port (RMB/wet tonne)

Port	Value	Change	Port	Value	Change	Port	Value	Change	Port	Value	Change
Bayuquan	-45.00	0.00	Fangcheng	-5.00	0.00	Lanshan	0.00	0.00	Qingdao	0.00	0.00
Beilun	5.00	0.00	Jiangyin	-20.00	0.00	Lianyungang	0.00	0.00	Rizhao	0.00	0.00
Caofeidian	-10.00	0.00	Jingtang	-10.00	0.00	Majishan	0.00	0.00	Shekou	0.00	0.00
Dalian	-45.00	0.00	Lanqiao	0.00	0.00	Nantong	-20.00	0.00	Tianjin	5.00	0.00

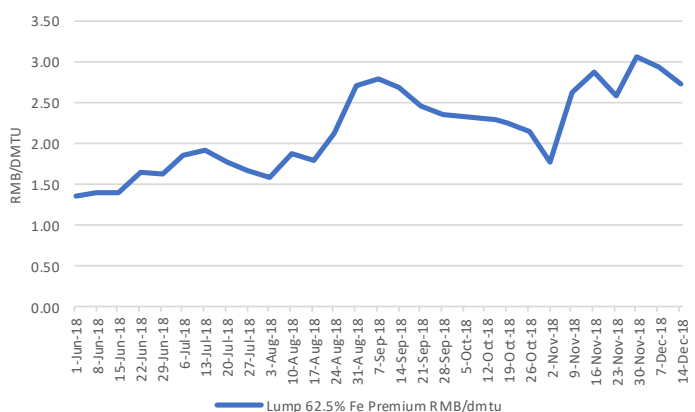
IRON ORE INDEX PREMIUMS/DISCOUNTS

December 19, 2018		PORT STOCK INDEX (RMB/WT)	
Fe Content	Spread to IOPI62	% Spread to IOPI62	
58% Fe Fines	-173	-30.40%	
65% Fe Fines	125	21.97%	

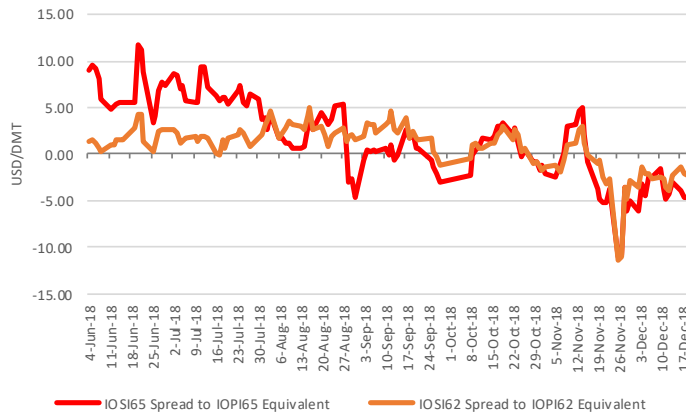
December 19, 2018		SEABORNE INDEX (USD/DMT)	
Fe Content	Spread to IOSI62	% Spread to IOSI62	
65% Fe Fines	14.50	20.31%	



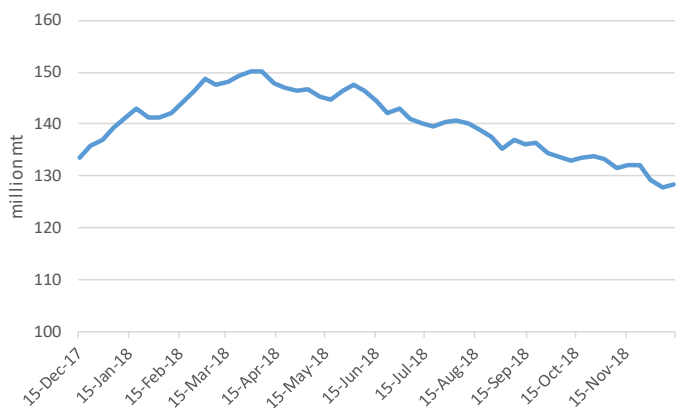
WEEKLY IRON ORE PORT STOCK LUMP PREMIUM (62.5% FE LUMP—62% FE FINES)



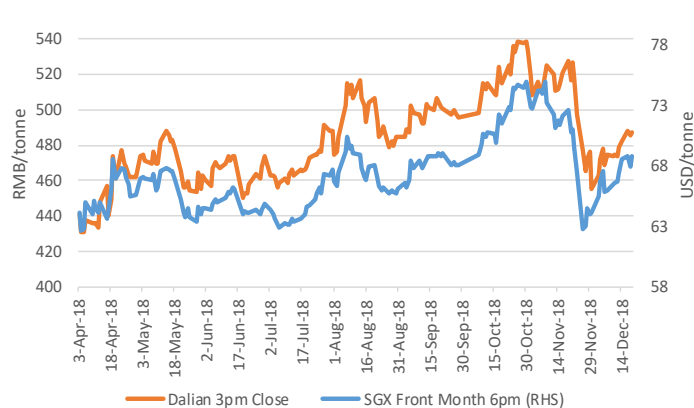
IRON ORE SEABORNE TO PORT STOCK SPREADS



TOTAL IRON ORE INVENTORIES AT CHINA PORTS



FUTURE TRADING—FRONT MONTH CLOSING PRICE



IRON ORE PORT INVENTORIES

Week Ending December 14, 2018 (million tonnes)				
Province	This week	Change %	Low <sup>4</sup>	High <sup>4</sup>
Jingtang	13.90	1.46%	13.29	19.00
Qingdao	16.50	2.55%	16.09	19.97
Caofeidian	18.45	-0.81%	16.70	25.30
Tianjin	9.70	-1.02%	8.50	11.00
Rizhao	14.95	1.36%	14.75	19.00
<b>Total (35 Ports)</b>	<b>128.22</b>	<b>0.39%</b>	<b>127.72</b>	<b>150.04</b>

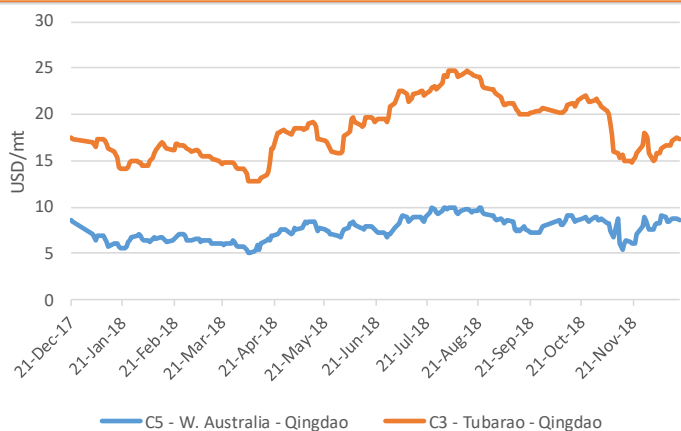
IRON ORE FUTURES CONTRACTS

Closing Date	DCE			SGX		
	19 Dec 3pm close			19 Dec 6 pm		
Contract	11905	Change	Change %	Jan'18	Change	Change %
Closing Price	487.0	1.0	0.21%	68.80	0.87	1.28%
Vol traded ('000 lots)	100.37	28.5	39.74%	11.35	-1.72	-13.14%
Open positions ('000 lots)	63.10	5.1	8.88%	95.35	0.09	0.09%
Day Low	484.0	1.0	0.21%	68.10	0.22	0.32%
Day High	492.0	2.0	0.41%	68.90	0.16	0.23%

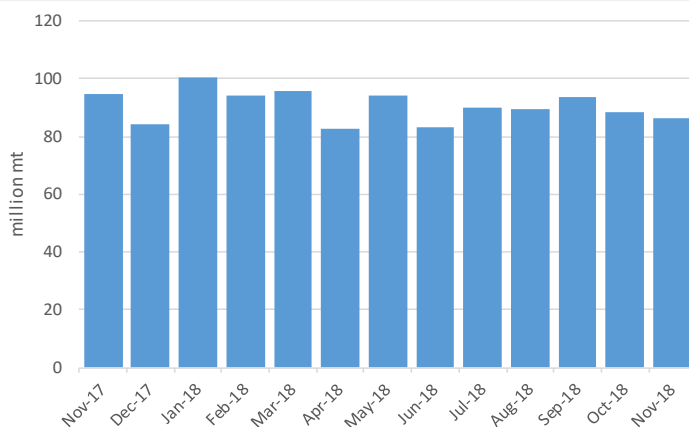
Daily Iron Ore Index Report

December 19, 2018

DRY BULK FREIGHT RATES



TOTAL CHINA IRON ORE IMPORT VOLUMES

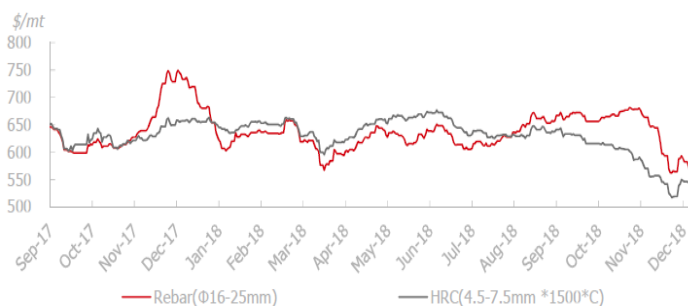


Steel Spot Market Prices - China

Steel Spot Market RMB/tonne

Product	14/12/2018	Change	Change %
ReBar HRB400 φ18mm	3,940.0	-59	-1.48%
Wirerod Q300 φ6.5mm	4,040.0	-63	-1.54%
HRC Q235/SS400 5.5mm*1500°C	3,818.0	68	1.81%
CRC SPCC/ST12 1.0mm*1250*2500	4,253.0	-20	-0.47%
Medium & Heavy Plate Q235B 20mm	3,836.0	-20	-0.52%
GI ST02Z 1.0mm*1000°C	4,620.0	-5	-0.11%
Billet Q235 150*150mm	3,350.0	40	1.21%

Rebar and HRC spot prices



CHINESE STEEL EXPORT PRICES

China Export Prices USD/tonne

Product	Specification	Export tax (+)/Vate rebate (-)	Change
14/12/2018			
Rebar	BS4449 460B 12-25mm, + chrome	-13%	490 -15
Wire Rod	SAE1008 6.5-10mm +chrome	-9%	500 -20
Hot-rolled coil	SS400/Q235 4.0-10.mm	-9%	490 -5
Cold-rolled coil	SPCC 1.0mm	-13%	540 0
Medium & Heavy plate	A-level Ship plate 12-25mm	0%	520 -20
Galvanised	ST02Z/SGCC 1.0mm	-13%	555 -15

Note: Calculation formula for converting export prices of rebar, cold-rolled steel and galvanizing into prices in China's spot market = FOB \* exchange rate \* 1.16 / (1.16 - 0.13); Calculation formula for converting export prices of wire rod and hot-rolled steel into prices in China's spot market = FOB \* exchange rate \* 1.16 / (1.16 - 0.09); Calculation formula for converting export prices of medium-thick plate into prices in China's spot market = FOB \* exchange rate

CHINESE STEEL INVENTORIES

Steel Inventories<sup>3</sup> (unit: 1000 tonnes)

Product	14/12/2018	7/12/2018	Change	Change %
Rebar	2,974	2,931	43	1.47%
Wirerod	1,005	978	27	2.76%
Hot-rolled Coil	1,944	2,026	-82	-4.05%
Medium & Thick Plate	995	1,021	-26	-2.55%
Cold-rolled Coil	1,081	1,102	-21	-1.91%
Total	7,999	8,058	-59	-0.73%

<sup>3</sup> SMM statistics cover inventories of major steel products in China's major markets: hot-rolled steel inventories in 33 major cities; rebar and wire inventories in 35 major cities; cold-rolled steel and medium-thick plate inventories in 31 major cities.

CHINESE STEEL MILL PROFITABILITY

SMM Tracking of Steel Mill P&L - Rebar and Hot-rolled Coil (RMB/tonne)

Category	Price	Change (WoW)	Note
MMI (Fe 62%), USD/mt excluding tax	71.67	0.50	Mmi CFR Equivalent index for 12th October
Coke	2,160	0	2nd grade met coke, Tangshan, incl. tax
Steel Scrap	2,130	80	steel scrap (6mm) in Zhangjiagang, excl. tax
Billet Cost	2,908	14	Q234, incl. tax
Rebar cost - Blast furnace	3,175	12	calculated based on theoretical weight, incl. tax
Rebar profit - Blast furnace	565	-102	based on Shanghai prices, incl. tax
Hot-rolled coil cost - Blast furnace	3,233	14	based on actual weight, incl. tax
Hot-rolled coil profit - Blast furnace	587	76	based on Shanghai prices, incl. tax

Note: 1. Costs in the table are calculated based on today's market prices and factored our management, sales, financial and depreciations fees.

2. The cost refers to average cost in the industry based on SMM's survey of small, medium and large mills in China

## IRON ORE INDEX SPECIFICATIONS, COMPILATION RATIONALE AND DATA EXCLUSIONS

Iron Ore Index Specifications (Port and Seaborne)					Iron Ore Index Compilation Rationale and Data Exclusions			
	65% Fe Fines	62% Fe Fines	58% Fe Fines	62.5% Fe Lump				
Fe %	65.00	62.00	58.00	62.50	MMi iron ore indices are compiled from data provided by companies that are part of the iron ore supply chain and involved in spot market transactions. The indices are calculated using detailed transaction-level data submitted to MMi by these companies. This data is normalised to the appropriate specifications and screened to remove outliers before volume-weighted average prices are calculated from the remaining core set of data.  For more details on MMi's iron ore methodology please download the guide published on our website at: <a href="http://www.mmiprices.com">www.mmiprices.com</a>			
Alumina %	1.40	2.25	2.25	1.50				
Silica%	1.50	4.00	5.50	3.50				
Phosphorus %	0.06	0.09	0.05	0.08				
Sulphur %	0.01	0.02	0.02	0.02				
Moisture %	8.00	8.00	9.00	4.00				
Sizing	Granular size below 10mm for at least 90% of cargo; maximum of 40% below 150 micron			Size below 6.3mm max 15% Size above 31.15mm max 25%	Data Exclusions*			
Pricing Point	Qingdao Port (FOT and CFR respectively)			FOT Qingdao Port	Port Index	62%	58%	65%
Timing (Seaborne)	Loading within 4 weeks, Delivery within 8 weeks			Delivery within 2 weeks	Seaborne Index	0	0	0
Payment Terms	L/C at sight			L/C at sight or CAD	Lump Index 62.5	0		

## IRON ORE DOMESTIC CONCENTRATE INDEX CALCULATION METHODOLOGY

The compilation method for price index generally refers to the compilation method of CPI price index and other price indices, breakdown the price data and calculate the average value according to a certain method, taking the vertical axis as the regional composite index (average of different grade index) and the horizontal axis as the grade composite index (average of different regional index), a total composite index for domestic ore can be output ultimately. The process system is also adopted in the calculation i.e. each sub-index can be obtained as well.

## AVERAGE IRON ORE SPECIFICATIONS APPLIED FOR BRAND PRICE ASSESSMENTS

PORT STOCK BRANDS						SEABORNE BRANDS					
December 19, 2018	SPECIFICATIONS APPLIED FOR 62% BRAND ASSESSMENTS						SPECIFICATIONS APPLIED FOR 62% BRAND ASSESSMENTS				
	Fe	Alumina	Silica	Phos	Moisture		Fe	Alumina	Silica	Phos	Moisture
Roy Hill	60.76%	2.35%	4.31%	0.060%	8.58%	Roy Hill	60.70%	2.30%	4.90%	0.055%	8.00%
SIMEC Fines	60.00%	2.30%	6.30%	0.060%	6.00%	SIMEC Fines	60.00%	2.30%	6.30%	0.060%	6.00%
PB Fines	61.57%	2.33%	3.61%	0.100%	9.35%	PB Fines 62%	62.00%	2.60%	4.30%	0.090%	10.00%
Newman Fines	62.21%	2.49%	4.22%	0.090%	7.97%	Newman Fines	62.80%	2.20%	4.30%	0.080%	6.40%
MAC Fines	60.83%	2.29%	4.66%	0.090%	7.43%	MAC Fines	61.00%	2.70%	4.70%	0.110%	9.30%
Jimblebar Blended Fines	61.37%	2.88%	4.19%	0.110%	6.82%	Jimblebar Blended Fines	61.79%	2.67%	4.08%	0.115%	7.16%
Carajas Fines	64.77%	1.21%	2.32%	0.060%	8.20%	Carajas Fines	65.10%	1.50%	1.70%	0.080%	8.50%
Brazilian SSF	62.00%	1.00%	6.50%	0.040%	6.00%	Brazilian SSF	62.00%	1.00%	6.50%	0.040%	6.00%
Brazilian Blend Fines	62.82%	1.48%	4.87%	0.070%	8.38%	Brazilian Blend Fines	62.50%	1.50%	5.00%	0.070%	7.00%
RTX Fines	61.00%	3.10%	4.50%	0.135%	7.50%	RTX Fines	61.00%	3.10%	4.50%	0.135%	7.50%
December 19, 2018	SPECIFICATIONS APPLIED FOR 58% BRAND ASSESSMENTS										
	Fe	Alumina	Silica	Phos	Moisture						
SSF	56.53%	3.06%	6.18%	0.050%	9.27%						
FMG Blended Fines	58.27%	2.68%	5.65%	0.060%	7.44%						
Robe River	56.63%	2.88%	1.85%	0.040%	9.09%						
Western Fines	57.73%	2.88%	7.25%	0.060%	7.45%						
Atlas Fines	56.59%	2.55%	7.14%	0.080%	8.46%						
Yandi	57.30%	1.37%	6.31%	0.040%	9.15%						

## BLOOMBERG TICKERS

PORT STOCK INDICES		
	FOT Qingdao (RMB/wet tonne)	CFR Qingdao Equivalent (USD/dry tonne)
IOPI62	IRCNQ001	IRCNQ004
IOPI58	IRCNQ002	IRCNQ005
IOPI65	IRCNQ003	IRCNQ006

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