

IRON ORE PORT STOCK INDEX (IOPI)

November 20 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	595	-4	-0.7%	591	502	443	603	76.69	-0.58	-0.8%	76.13	67.01	75.83	77.89
IOPI58	58% Fe Fines	412	-2	-0.5%	413	356	304	419	51.94	-0.59	-1.1%	51.99	46.14	40.67	52.59
IOPI65	65% Fe Fines	778	5	0.6%	752	654	541	784	101.44	0.63	0.6%	97.89	88.27	96.35	101.71

IRON ORE SEABORNE INDEX (IOSI)

MARKET COMMENTARY

November 20 2018		CFR Qingdao, USD/dry tonne							MARKET COMMENTARY							
Index	Fe Content	Price	Change	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>	SMM data shows that sixty-three vessels carrying 9.43 million mt of iron ore are likely to arrive at major Chinese ports during November 16-22, down 1.5 million mt from November 9-15. This ends four consecutive weeks of increases. For the same period, iron ore shipments departing Australian ports will fall 320,000 mt to 15.02 million mt due to maintenance at ports. Iron ore shipments leaving Brazilian ports are likely to grow 430,000 mt to 8.27 million mt during the period.							
IOSI62	62% Fe Fines	76.00	-0.20	-0.3%	76.06	68.90	63.25	86.20								
IOSI65	65% Fe Fines	96.70	-0.30	-0.3%	97.92	94.56	86.20	101.50								

IRON ORE PORT LUMP INDEX (IOPLI)

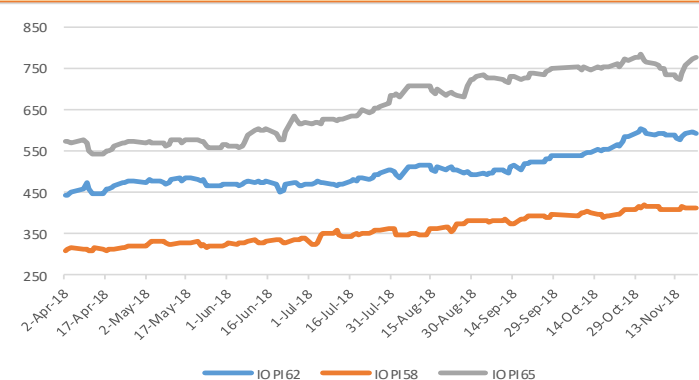
Week Ending November 16		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>
IOPLI62	62.5% Fe Lump	789	8	1.0%	769	638	565	789	98.50	0.97	1.0%	95.89	82.34	76.63	98.50

IRON ORE DOMESTIC CONCENTRATE SPOT PRICE ASSESSMENTS AND COMPOSITE INDEX

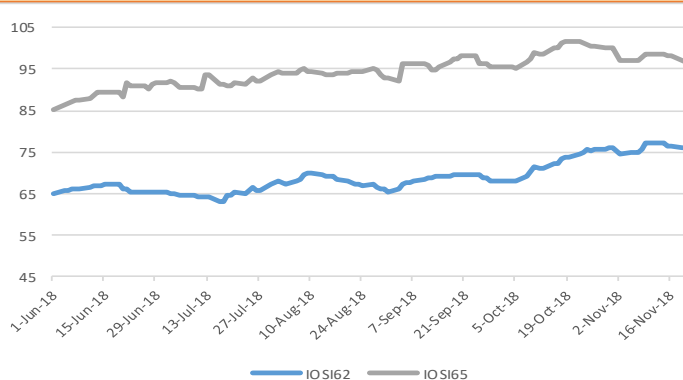
Week Ending November 16, 2018				RMB/tonne (excluding tax) <sup>4</sup>				USD/tonne (excluding tax) <sup>4</sup>			
Province	Region	Product	Basis	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>
Hebei	Hanxing	66% Fe Concentrate	Dry	716	0.1%	579	718	103.09	-0.3%	83.36	103.38
Hebei	Qian'an	65% Fe Concentrate	Dry	815	1.2%	630	815	117.34	0.8%	90.71	117.34
Liaoning	Anshan	65% Fe Concentrate	Wet	565	1.8%	445	565	81.35	1.3%	64.07	81.35
Shandong	Zibo	65% Fe Concentrate	Dry	815	0.0%	620	815	117.34	-0.5%	89.27	117.34
Week Ending November 16, 2018				This week	Change %	Low <sup>5</sup>	High <sup>5</sup>				
China Mines Concentrate Composite Index RMB/WT				676.26	0.7%	534.50	676.26				

<sup>1</sup> Exchange rate applied: RMB/USD = 6.9280 <sup>2</sup> 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

November 20 2018		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	July	August	September	October	MTD	QTD	YTD <sup>2</sup>	July	August	September	October	MTD	QTD	YTD <sup>2</sup>
IOPI62	62% Fe Fines	482	505	513	564	591	576	502	64.29	63.41	65.25	72.55	76.13	74.11	67.01
IOPI58	58% Fe Fines	349	363	385	401	413	406	356	44.14	44.86	45.84	50.47	51.99	51.14	46.14
IOPI65	65% Fe Fines	638	701	732	760	752	757	654	82.19	85.29	92.13	99.05	97.89	98.54	88.27

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

FREIGHT RATES

November 20 2018		CFR Qingdao, USD/dry tonne							FREIGHT RATES - DRY BULK US\$/wet tonne						
Index	Fe Content	July	August	September	October	MTD	QTD	YTD <sup>3</sup>	Route	Designation	Change	Change %	Low <sup>5</sup>	High <sup>5</sup>	
IOSI62	62% Fe Fines	65.09	67.89	68.79	72.31	76.06	73.66	68.9	W. Australia - Qingdao	C5	6.26	-0.09	-1.50%	5.109	10.002
IOSI65	65% Fe Fines	91.90	94.04	96.48	98.97	97.92	98.59	94.56	Tubarao - Qingdao	C3	14.91	-0.07	-0.45%	12.705	24.76

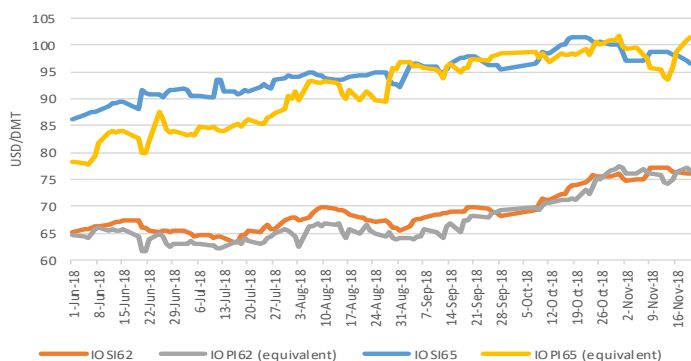
IRON ORE PORT LUMP INDEX MONTHLY, QUARTERLY AND YEAR-TO-DATE AVERAGES

Week Ending November 16		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	July	August	September	October	MTD	QTD	YTD <sup>3</sup>	July	August	September	October	MTD	QTD	YTD <sup>2</sup>
IOPLI62	62.5% Fe Lump	613	652	695	720	769	745	638	78.18	81.74	87.49	89.65	95.89	92.77	82.34

Daily Iron Ore Index Report

November 20 2018

IRON ORE INDEX COMPARISONS



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



IRON ORE BRAND SPOT PRICE ASSESSMENTS

November 20 2018	PORT STOCK INDEX (RMB/WT)			November 20 2018	SEABORNE INDEX (USD/DMT)		
	Price	Change	Diff to IOPI62		Price	Change	Diff to IOSI62
Roy Hill	558	-6	-37	Roy Hill	69.05	-0.62	-6.95
SIMEC Fines	514	-7	-81	SIMEC Fines	62.57	-0.63	-13.43
PB Fines	575	-5	-20	PB Fines	74.92	-0.13	-1.08
Newman Fines	585	-7	-10	Newman Fines	78.14	0.23	2.14
MAC Fines	562	-3	-33	MAC Fines	69.42	-0.53	-6.58
Jimblebar Blended Fines	506	-10	-89	Jimblebar Blended Fines	60.57	-0.75	-15.43
Carajas Fines	762	2	167	Carajas Fines	95.71	-0.45	19.71
Brazilian SSF	598	-4	3	Brazilian SSF	79.44	-0.82	3.44
Brazilian Blend Fines	614	-4	19	Brazilian Blend Fines	81.19	-0.45	5.19
RTX Fines	467	-18	-128	RTX Fines	64.57	-1.08	-11.43

November 20 2018	PORT STOCK INDEX (RMB/WT)		
	Price	Change	Diff to IOPI58
SSF	363	0	-49
FMG Blended Fines	413	-2	1
Robe River	415	-22	3
Western Fines	388	2	-24
Atlas Fines	370	6	-42
Yandi	467	2	55

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%	14.00	1.00	1% Fe	High Grade Fe 60 - 63%	3.25	0.50
	High Grade Fe 63 - 64%	48.00	0.00		High Grade Fe 63 - 64%	2.25	0.00
	High Grade Fe 64 - 65%	48.00	0.00		High Grade Fe 64 - 65%	2.25	0.00
	High Grade Fe 65 - 65.5%	48.00	0.00		High Grade Fe 65 - 65.5%	2.25	0.00
	Low Grade Fe	16.00	0.00				
1% Alumina	High Fe Grade Al <2.25%	44.00	0.00	1% Alumina	High Fe Grade Al <2.25%	8.75	-1.00
	High Fe Grade Al 2.25-4%	80.00	5.00		High Fe Grade Al 2.25-4%	0.50	0.00
	Low Fe Grade Al <2.25%	90.00	0.00				
	Low Fe Grade Al 2.25-4%	18.00	3.00				
1% Silica	High Fe Grade Si <4%	14.00	3.00	1% Silica	High Fe Grade Si <4%	2.25	0.00
	High Fe Grade Si 4-6.5%	26.00	0.00		High Fe Grade Si 4 - 6.5%	3.00	-0.25
	Low Fe Grade	10.00	-5.00				
0.01% Phosphorus	High Fe Grade 0.09%<P<0.115%	7.00	2.00	0.01% Phosphorus	High Fe Grade 0.09%<P<0.115%	0.50	0.00
	High Fe Grade 0.115%<P<0.15%	9.00	2.00		High Fe Grade 0.115%<P<0.15%	2.50	0.25
	Low Fe Grade 0.09%<P<0.1%	4.00	-1.00				

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

Port	Value	Change	Port	Value	Change	Port	Value	Change	Port	Value	Change
Bayuquan	-25.00	0.00	Fangcheng	-5.00	0.00	Lanshan	0.00	0.00	Qingdao	0.00	0.00
Beilun	5.00	0.00	Jiangyin	-10.00	0.00	Lianyungang	0.00	0.00	Rizhao	0.00	0.00
Caofeidian	-5.00	0.00	Jingtang	-5.00	0.00	Majishan	0.00	0.00	Shekou	0.00	0.00
Dalian	-15.00	0.00	Lanqiao	0.00	0.00	Nantong	-10.00	0.00	Tianjin	-15.00	0.00

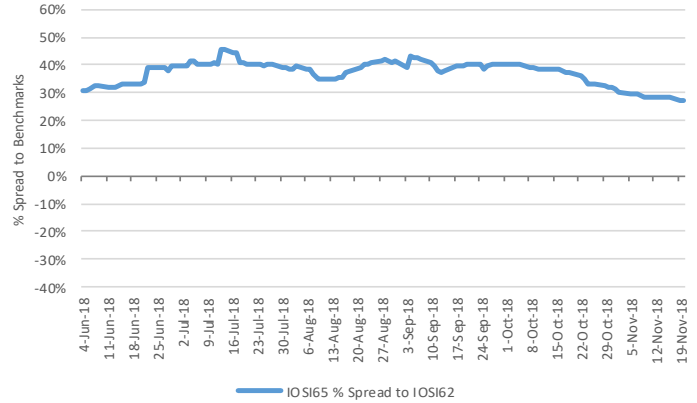
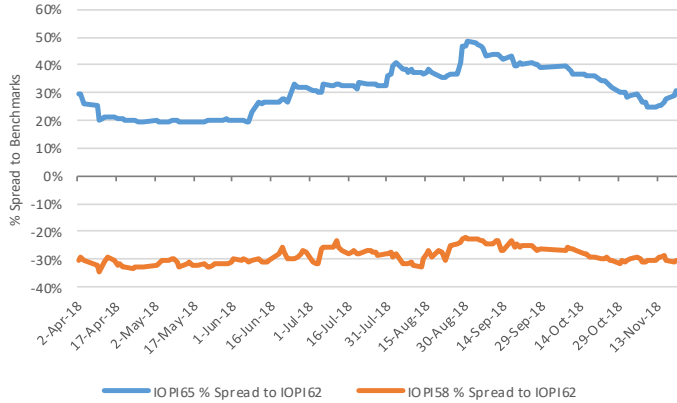
Daily Iron Ore Index Report

November 20 2018

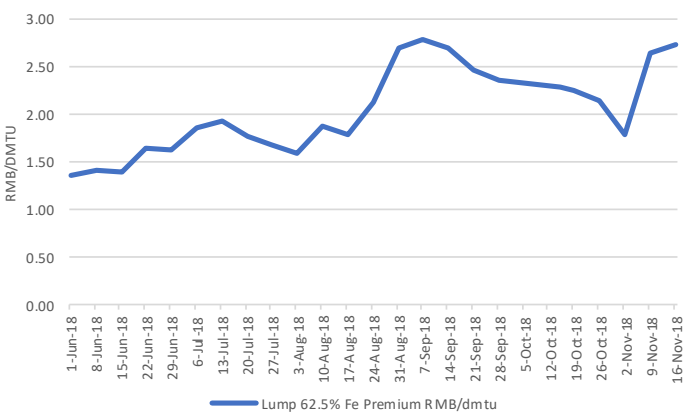
IRON ORE INDEX PREMIUMS/DISCOUNTS

November 20 2018		PORT STOCK INDEX (RMB/WT)	
Fe Content	Spread to IOPI62	% Spread to IOPI62	
58% Fe Fines	-183	-30.76%	
65% Fe Fines	183	30.76%	

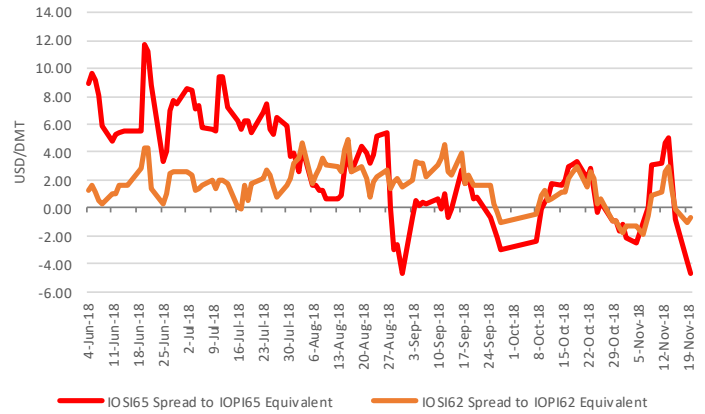
November 20 2018		SEABORNE INDEX (USD/DMT)	
Fe Content	Spread to IOSI62	% Spread to IOSI62	
65% Fe Fines	20.70	27.24%	



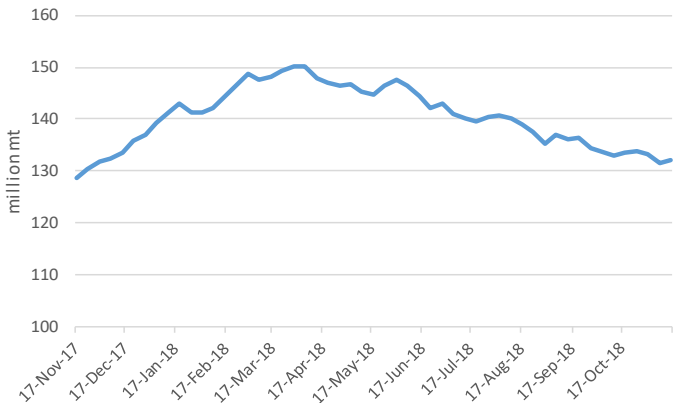
WEEKLY IRON ORE PORT STOCK LUMP PREMIUM (62.5% FE LUMP—62% FE FINES)



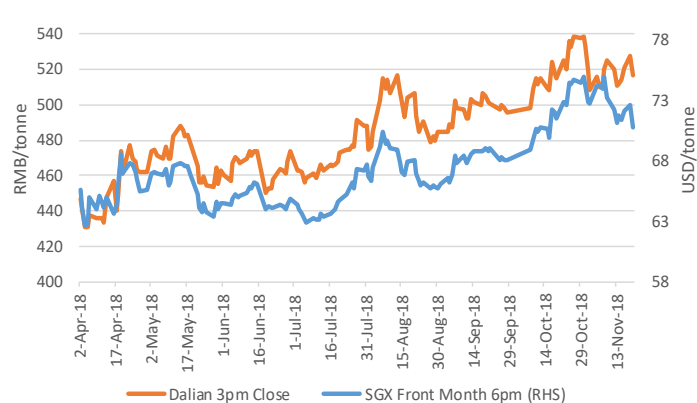
IRON ORE SEABORNE TO PORT STOCK SPREADS



TOTAL IRON ORE INVENTORIES AT CHINA PORTS



FUTURE TRADING—FRONT MONTH CLOSING PRICE



IRON ORE PORT INVENTORIES

Week Ending November 16, 2018 (million tonnes)				
Province	This week	Change %	Low <sup>4</sup>	High <sup>4</sup>
Jingtang	14.00	3.86%	13.47	19.00
Qingdao	17.50	-1.13%	15.60	19.97
Caofeidian	19.40	4.30%	16.70	25.30
Tianjin	9.90	1.02%	8.50	11.00
Rizhao	15.50	0.00%	14.04	19.00
<b>Total (35 Ports)</b>	<b>132.06</b>	<b>0.33%</b>	<b>128.70</b>	<b>150.04</b>

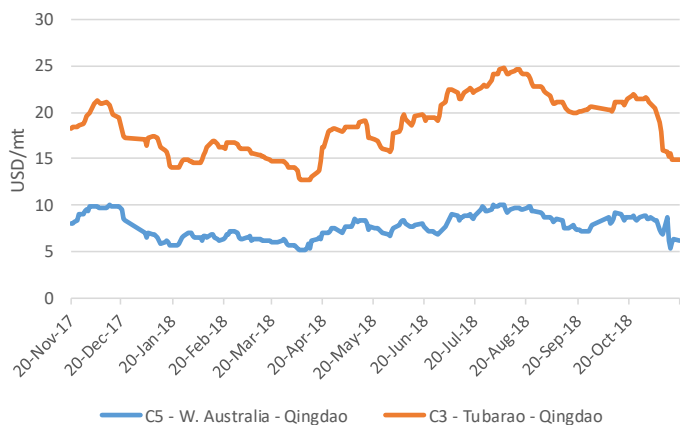
IRON ORE FUTURES CONTRACTS

Closing Date	DCE			SGX		
	20 Nov 3pm close	Change	Change %	20 Nov 6 pm	Change	Change %
Contract	11901			Dec'18		
Closing Price	517.0	-10.5	-1.99%	70.86	-1.74	-2.40%
Vol traded ('000 lots)	96.90	-33.5	-25.69%	13.87	-2.09	-13.10%
Open positions ('000 lots)	65.39	-4.8	-6.79%	132.42	5.74	4.53%
Day Low	512.5	-2.0	-0.39%	70.86	-1.11	-1.54%
Day High	528.0	-2.0	-0.38%	72.49	-0.32	-0.44%

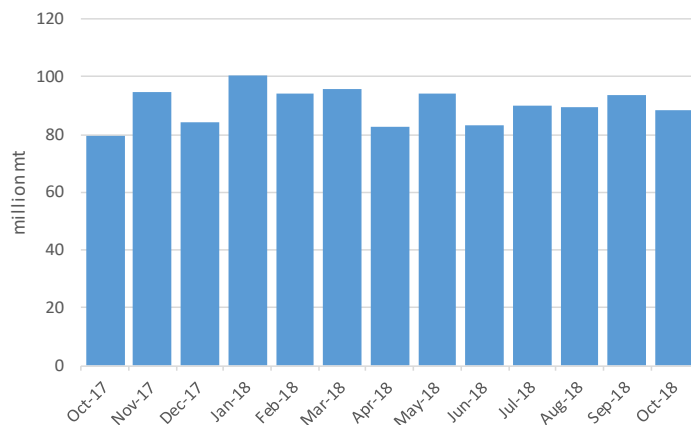
Daily Iron Ore Index Report

November 20 2018

DRY BULK FREIGHT RATES



TOTAL CHINA IRON ORE IMPORT VOLUMES

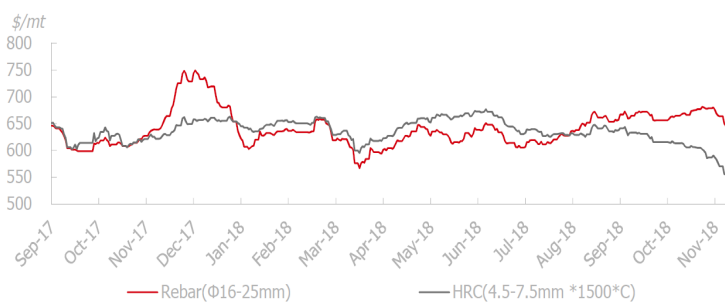


Steel Spot Market Prices - China

Steel Spot Market RMB/tonne

Product	16/11/2018	Change	Change %
ReBar HRB400 φ18mm	4,473.0	-129	-2.80%
Wirerod Q300 φ6.5mm	4,642.0	-130	-2.72%
HRC Q235/SS400 5.5mm*1500*C	3,866.0	-88	-2.23%
CRC SPCC/ST12 1.0mm*1250*2500	4,503.0	-130	-2.81%
Medium & Heavy Plate Q235B 20mm	4,163.0	-97	-2.28%
GI ST02Z 1.0mm*1000*C	4,810.0	-170	-3.41%
Billet Q235 150*150mm	3,640.0	-160	-4.21%

Rebar and HRC spot prices



Source: SMM

CHINESE STEEL EXPORT PRICES

China Export Prices USD/tonne

Product	Specification	Export tax (+)/Vate rebate (-)	16/11/2018	
			Price	Change
Rebar	BS4449 460B 12-25mm, + chrome	-13%	540	-10
Wire Rod	SAE1008 6.5-10mm +chrome	-9%	565	-10
Hot-rolled coil	SS400/Q235 4.0-10.mm	-9%	525	-20
Cold-rolled coil	SPCC 1.0mm	-13%	575	-20
Medium & Heavy plate	A-level Ship plate 12-25mm	0%	565	-15
Galvanised	ST02Z/SGCC 1.0mm	-13%	625	-25

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	16/11/2018	9/11/2018	Change	Change %
Rebar	3,207	3,390	-183	-5.40%
Wirerod	1,058	1,028	30	2.92%
Hot-rolled Coil	2,208	2,309	-101	-4.37%
Medium & Thick Plate	1,111	1,124	-13	-1.16%
Cold-rolled Coil	1,150	1,168	-18	-1.54%
Total	8,734	9,018	-284	-3.15%

<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	76.45	0.26	Mmi CFR Equivalent index for 12th October
Coke	2,611	1	2nd grade met coke, Tangshan, incl. tax
Steel Scrap	2,340	-70	steel scrap (6mm) in Zhangjiagang, excl. tax
Billet Cost	3,230	-29	Q234, incl. tax
Rebar cost - Blast furnace	3,499	-29	calculated based on theoretical weight, incl. tax
Rebar profit - Blast furnace	801	-171	based on Shanghai prices, incl. tax
Hot-rolled coil cost - Blast furnace	3,555	-29	based on actual weight, incl. tax
Hot-rolled coil profit - Blast furnace	265	-51	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.																							
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	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>																							
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%																								
Pricing Point	Qingdao Port (FOT and CFR respectively)			FOT Qingdao Port	<table border="1"> <thead> <tr> <th colspan="4">Data Exclusions*</th> </tr> <tr> <th></th> <th>62%</th> <th>58%</th> <th>65%</th> </tr> </thead> <tbody> <tr> <td>Port Index</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Seaborne Index</td> <td>0</td> <td></td> <td>0</td> </tr> <tr> <td>Lump Index 62.5</td> <td>0</td> <td></td> <td></td> </tr> </tbody> </table>				Data Exclusions*					62%	58%	65%	Port Index	0	0	0	Seaborne Index	0		0	Lump Index 62.5	0		
Data Exclusions*																												
	62%	58%	65%																									
Port Index	0	0	0																									
Seaborne Index	0		0																									
Lump Index 62.5	0																											
Timing (Seaborne)	Loading within 4 weeks, Delivery within 8 weeks			Delivery within 2 weeks																								
Payment Terms	L/C at sight			L/C at sight or CAD																								

## 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					
November 20 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	61.65%	2.32%	3.55%	0.100%	9.27%	PB Fines 62%	62.00%	2.60%	4.30%	0.090%	10.00%
Newman Fines	62.32%	2.41%	4.09%	0.090%	7.85%	Newman Fines	62.80%	2.20%	4.30%	0.080%	6.40%
MAC Fines	60.74%	2.25%	4.64%	0.090%	7.63%	MAC Fines	61.00%	2.70%	4.70%	0.110%	9.30%
Jimblebar Blended Fines	61.39%	2.82%	4.26%	0.100%	6.76%	Jimblebar Blended Fines	61.79%	2.67%	4.08%	0.115%	7.16%
Carajas Fines	64.78%	1.21%	2.32%	0.080%	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	62.74%	1.52%	4.80%	0.060%	8.35%	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%
November 20 2018	SPECIFICATIONS APPLIED FOR 58% BRAND ASSESSMENTS										
	Fe	Alumina	Silica	Phos	Moisture						
SSF	56.44%	3.00%	6.30%	0.050%	9.54%						
FMG Blended Fines	58.34%	2.77%	5.83%	0.070%	7.14%						
Robe River	56.63%	2.88%	1.85%	0.040%	9.09%						
Western Fines	57.57%	2.86%	6.73%	0.060%	7.58%						
Atlas Fines	56.59%	2.55%	7.14%	0.080%	8.46%						
Yandi	57.13%	1.38%	6.34%	0.030%	9.21%						

## 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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