

IRON ORE PORT STOCK INDEX (IOPI)

December 28, 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	579	6	1.0%	559	510	443	603	75.23	1.10	1.5%	72.28	67.74	61.36	77.89
IOPI58	58% Fe Fines	404	-2	-0.5%	392	361	304	419	51.34	-0.07	-0.1%	49.55	46.63	40.67	52.71
IOPI65	65% Fe Fines	667	0	0.0%	681	659	541	784	87.24	0.33	0.4%	88.86	88.55	75.83	101.71

IRON ORE SEABORNE INDEX (IOSI)

December 28, 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	72.50	0.30	0.4%	69.83	68.96	62.95	86.20
IOSI65	65% Fe Fines	87.80	0.50	0.6%	85.85	93.10	83.20	101.50

MARKET COMMENTARY

Shipment restrictions from air pollution lowered daily average deliveries of iron ore leaving Tangshan's Caofeidian port, and this accumulated port stocks on the week. Stocks across 35 major Chinese ports increased by 2.15 million mt from a week ago to stand at 130.48 million mt as of Friday December 28, SMM data showed. Stocks across most northern and eastern ports nudged up, except for Jiangtang port in Tangshan and Rizhao port in Shandong. Delivery limitations at Caofeidian port pushed mills to purchase from the local Jiangtang port, which buoyed average deliveries departing Jiangtang port.

IRON ORE PORT LUMP INDEX (IOPLI)

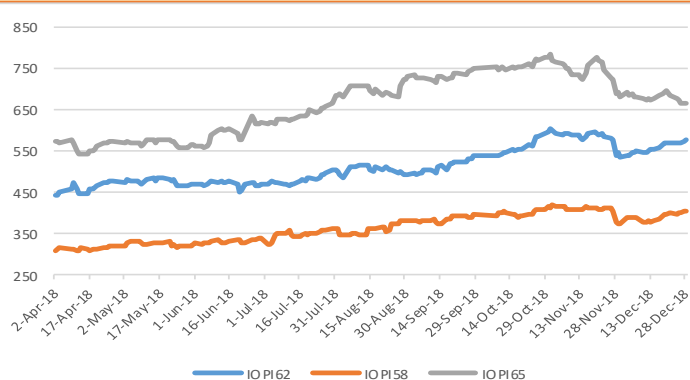
Week Ending December 28		FOT Qingdao (inc. 16% VAT), RMB/wet tonne							CFR Qingdao Equivalent (exc. 16% VAT), USD/dry tonne <sup>1</sup>						
Index	Fe Content	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>	Price	W-o-W	Change %	MTD	YTD <sup>3</sup>	Low <sup>3</sup>	High <sup>3</sup>
IOPLI62	62.5% Fe Lump	752	2	0.3%	749	656	565	789	94.73	0.53	0.6%	94.22	84.35	76.63	98.50

IRON ORE DOMESTIC CONCENTRATE SPOT PRICE ASSESSMENTS AND COMPOSITE INDEX

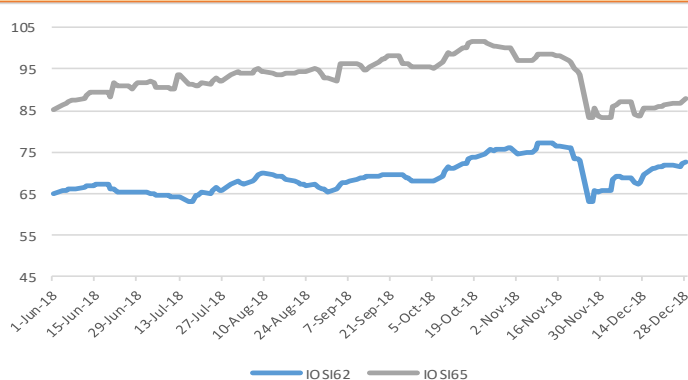
Week Ending December 21, 2018				RMB/tonne (excluding tax) <sup>4</sup>				USD/tonne (excluding tax) <sup>4</sup>			
Province	Region	Product	Basis	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>	This week	Change %	Low <sup>2</sup>	High <sup>2</sup>
Hebei	Hanxing	66% Fe Concentrate	Dry	658	1.1%	579	718	95.53	1.04%	84.06	104.24
Hebei	Qian'an	65% Fe Concentrate	Dry	735	4.3%	630	815	106.71	4.22%	91.47	118.33
Liaoning	Anshan	65% Fe Concentrate	Wet	535	0.0%	445	565	77.67	-0.03%	64.61	82.03
Shandong	Zibo	65% Fe Concentrate	Dry	740	0.0%	620	815	107.44	-0.03%	90.01	118.33
Week Ending December 21, 2018				This week	Change %	Low <sup>5</sup>	High <sup>5</sup>				
China Mines Concentrate Composite Index RMB/WT				617.30	1.2%	534.50	676.26				

<sup>1</sup> Exchange rate applied: RMB/USD = 6.8632 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 28, 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	559	569	510	64.29	63.41	65.25	72.55	72.28	73.36	67.74
IOPI58	58% Fe Fines	363	385	401	401	392	400	361	44.14	44.86	45.84	50.47	49.55	50.44	46.63
IOPI65	65% Fe Fines	701	732	760	760	681	727	659	82.19	85.29	92.13	99.05	88.86	84.72	88.55

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

December 28, 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	69.83	71.76	68.96
IOSI65	65% Fe Fines	94.04	96.48	98.97	94.05	85.85	93.37	93.10

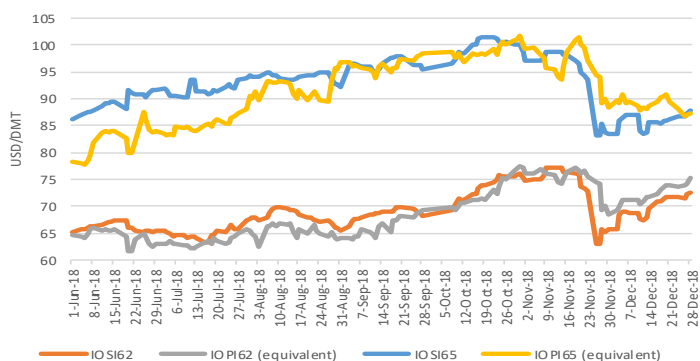
FREIGHT RATES

December 27 2018		FREIGHT RATES - DRY BULK US\$/wet tonne				
Route	Designation	Change	Change %	Low <sup>5</sup>	High <sup>5</sup>	
W. Australia - Qingdao	C5	6.21	0.00	0.00%	5.109	10.002
Tubarao - Qingdao	C3	16.09	0.00	0.00%	12.705	24.76

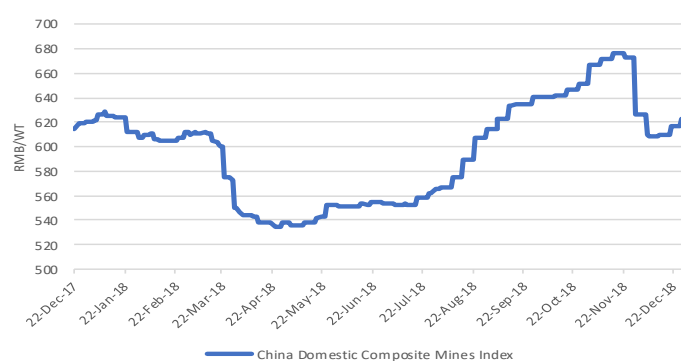
IRON ORE PORT LUMP INDEX MONTHLY, QUARTERLY AND YEAR-TO-DATE AVERAGES

Week Ending December 28		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	749	751	656	81.74	87.49	89.65	96.21	94.22	93.91	84.35

IRON ORE INDEX COMPARISONS



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



IRON ORE BRAND SPOT PRICE ASSESSMENTS

December 28, 2018	PORT STOCK INDEX (RMB/WT)			December 28, 2018	SEABORNE INDEX (USD/DMT)		
	Price	Change	Diff to IOPI62		Price	Change	Diff to IOSI62
Roy Hill	548	6	-31	Roy Hill	67.34	0.28	-5.16
SIMEC Fines	470	7	-109	SIMEC Fines	63.66	0.27	-8.84
PB Fines	561	6	-18	PB Fines	71.94	0.13	-0.56
Newman Fines	561	7	-18	Newman Fines	75.00	0.28	2.50
MAC Fines	539	7	-40	MAC Fines	67.71	0.07	-4.79
Jimblebar Blended Fines	513	8	-66	Jimblebar Blended Fines	62.54	-0.22	-9.96
Carajas Fines	664	0	85	Carajas Fines	86.92	-0.08	14.42
Brazilian SSF	509	7	-70	Brazilian SSF	75.00	-0.32	2.50
Brazilian Blend Fines	561	6	-18	Brazilian Blend Fines	76.12	-0.08	3.62
RTX Fines	499	8	-80	RTX Fines	63.99	-0.12	-8.51

December 28, 2018	PORT STOCK INDEX (RMB/WT)		
	Price	Change	Diff to IOPI58
SSF	349	-9	-55
FMG Blended Fines	401	-5	-3
Robe River	429	13	25
Western Fines	358	-15	-46
Atlas Fines	350	-11	-54
Yandi	449	-7	45

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%	8.00	0.00	1% Fe	High Grade Fe 60 - 63%	3.25	0.00
	High Grade Fe 63 - 64%	28.00	-3.00		High Grade Fe 63 - 64%	2.25	0.00
	High Grade Fe 64 - 65%	28.00	-3.00		High Grade Fe 64 - 65%	2.25	0.00
	High Grade Fe 65 - 65.5%	28.00	-3.00		High Grade Fe 65 - 65.5%	2.25	0.00
	Low Grade Fe	15.00	0.00				
1% Alumina	High Fe Grade Al <2.25%	23.00	0.00	1% Alumina	High Fe Grade Al <2.25%	4.00	-0.50
	High Fe Grade Al 2.25-4%	42.00	-3.00		High Fe Grade Al 2.25-4%	0.75	0.50
	Low Fe Grade Al <2.25%	81.00	0.00				
	Low Fe Grade Al 2.25-4%	25.00	5.00				
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%	44.00	0.00		High Fe Grade Si 4 - 6.5%	1.00	0.00
	Low Fe Grade	17.00	5.00				
0.01% Phosphorus	High Fe Grade 0.09%<P<0.115%	5.00	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%	2.00	0.00		High Fe Grade 0.115%<P<0.15%	1.75	0.00
	Low Fe Grade 0.09<P<0.1%	6.00	3.00				

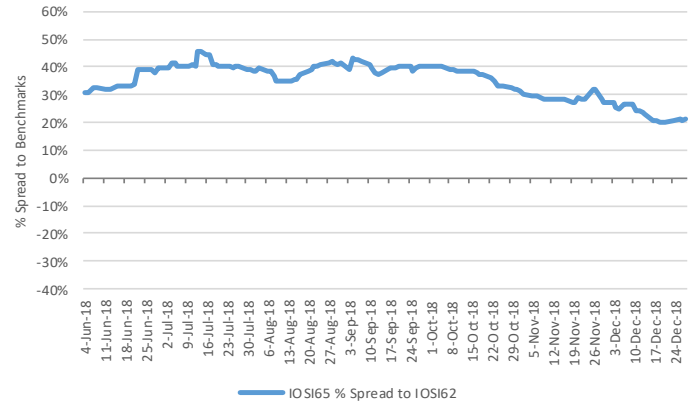
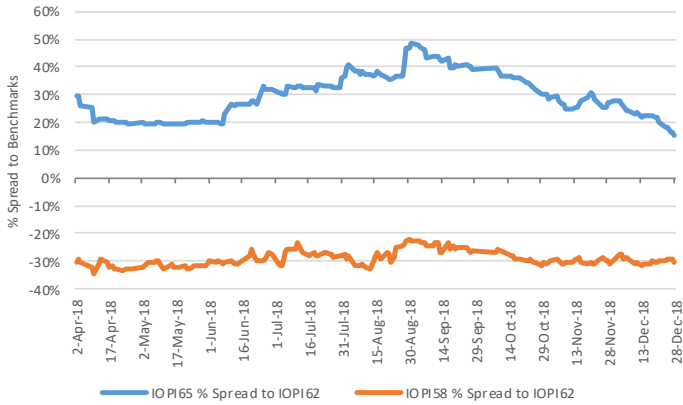
Port Stock Differentials to Qingdao Port (RMB/wet tonne)

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	-10.00	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	-30.00	0.00	Lanqiao	0.00	0.00	Nantong	-10.00	0.00	Tianjin	0.00	0.00

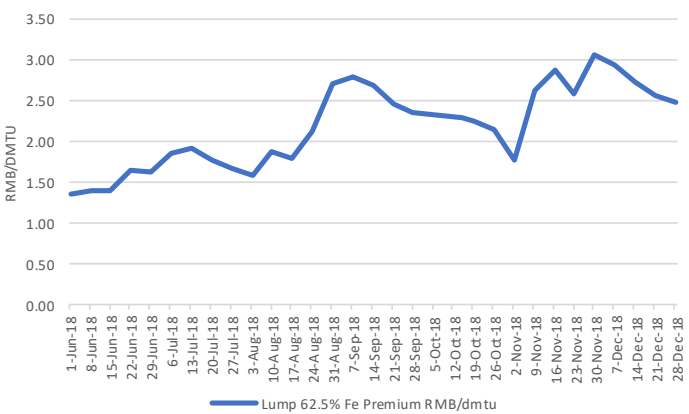
IRON ORE INDEX PREMIUMS/DISCOUNTS

December 28, 2018		PORT STOCK INDEX (RMB/WT)	
Fe Content	Spread to IOPI62	% Spread to IOPI62	
58% Fe Fines	-175	-30.22%	
65% Fe Fines	88	15.20%	

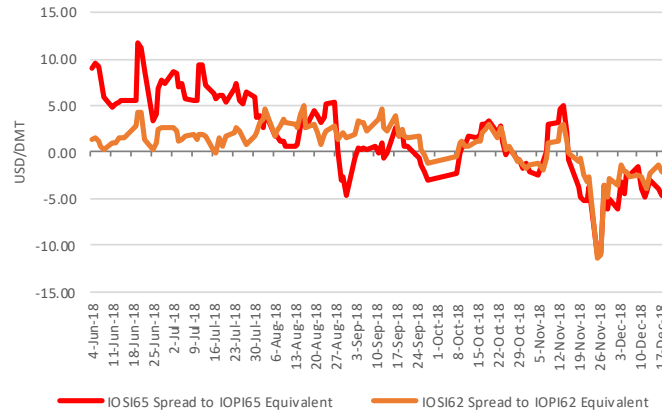
December 28, 2018		SEABORNE INDEX (USD/DMT)	
Fe Content	Spread to IOSI62	% Spread to IOSI62	
65% Fe Fines	15.30	21.10%	



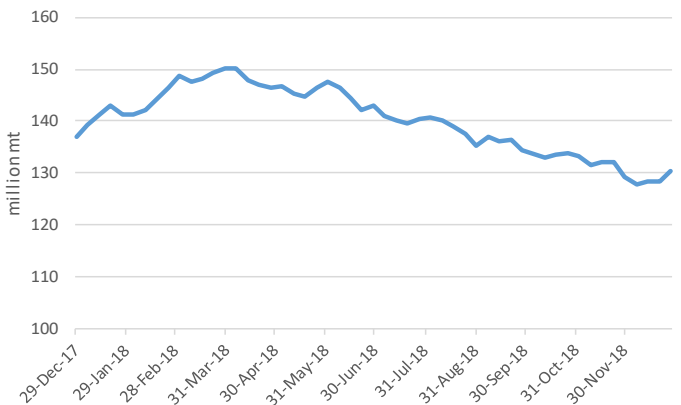
WEEKLY IRON ORE PORT STOCK LUMP PREMIUM (62.5% FE LUMP—62% FE FINES)



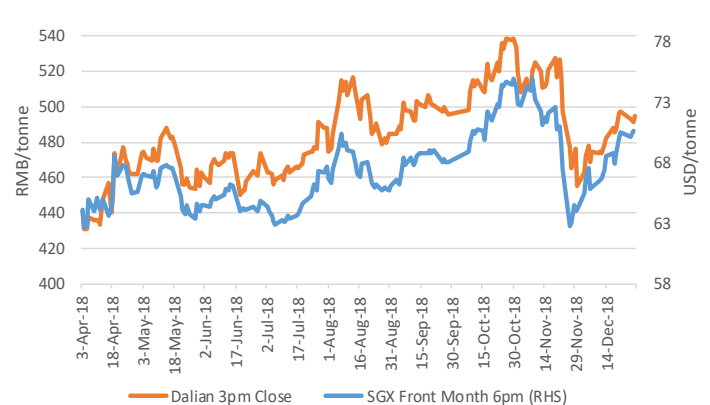
IRON ORE SEABORNE TO PORT STOCK SPREADS



TOTAL IRON ORE INVENTORIES AT CHINA PORTS



FUTURE TRADING—FRONT MONTH CLOSING PRICE



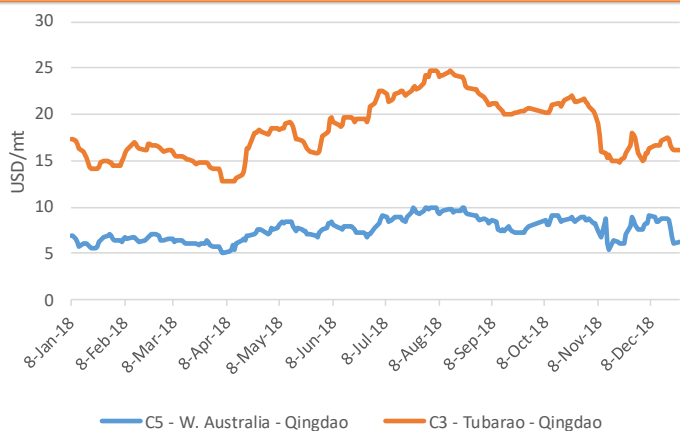
IRON ORE PORT INVENTORIES

Week Ending December 28, 2018 (million tonnes)				
Province	This week	Change %	Low <sup>4</sup>	High <sup>4</sup>
Jingtang	13.60	-2.16%	13.29	19.00
Qingdao	17.00	3.03%	16.09	19.97
Caofeidian	19.30	4.61%	16.70	25.30
Tianjin	9.60	-1.03%	8.50	11.00
Rizhao	14.00	-6.35%	14.00	19.00
<b>Total (35 Ports)</b>	<b>130.48</b>	<b>1.76%</b>	<b>127.72</b>	<b>150.04</b>

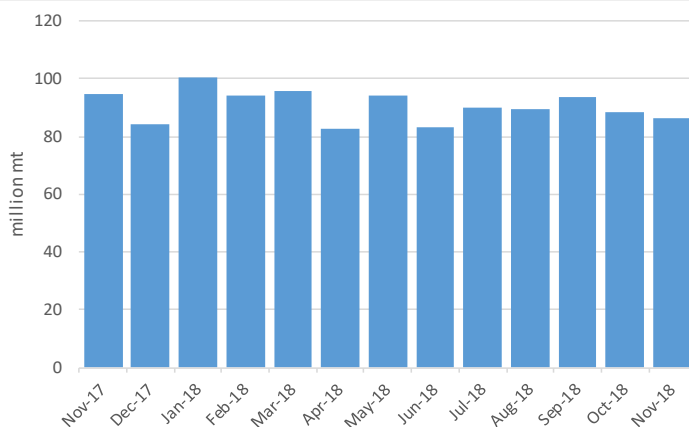
IRON ORE FUTURES CONTRACTS

Closing Date	DCE			SGX		
	28 Dec 3pm close			28 Dec 6 pm		
Contract	11905	Change	Change %	Jan'18	Change	Change %
Closing Price	495.0	3.5	0.71%	70.69	0.00	0.00%
Vol traded ('000 lots)	74.68	-43.9	-37.00%	11.34	0.00	0.00%
Open positions ('000 lots)	74.23	-1.7	-2.21%	113.77	0.00	0.00%
Day Low	489.0	2.5	0.51%	70.11	0.00	0.00%
Day High	492.0	-6.0	-1.20%	70.69	0.00	0.00%

DRY BULK FREIGHT RATES



TOTAL CHINA IRON ORE IMPORT VOLUMES

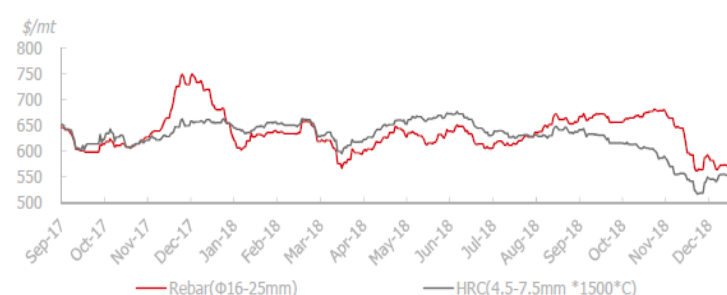


Steel Spot Market Prices - China

Steel Spot Market RMB/tonne

Product	21/12/2018	Change	Change %
ReBar HRB400 φ18mm	3,975.0	35	0.89%
Wirerod Q300 φ6.5mm	4,070.0	30	0.74%
HRC Q235/SS400 5.5mm*1500*C	3,834.0	16	0.42%
CRC SPCC/ST12 1.0mm*1250*2500	4,266.0	13	0.31%
Medium & Heavy Plate Q235B 20mm	3,860.0	24	0.63%
GI ST02Z 1.0mm*1000*C	4,620.0	0	0.00%
Billet Q235 150*150mm	3,440.0	90	2.69%

Rebar and HRC spot prices



Source: SMM

CHINESE STEEL EXPORT PRICES

China Export Prices USD/tonne

Product	Specification	Export tax (+)/Vate rebate (-)	Change
21/12/2018			
Rebar	BS4449 460B 12-25mm, + chrome	-13%	495 5
Wire Rod	SAE1008 6.5-10mm +chrome	-9%	505 5
Hot-rolled coil	SS400/Q235 4.0-10.mm	-9%	500 10
Cold-rolled coil	SPCC 1.0mm	-13%	545 5
Medium & Heavy plate	A-level Ship plate 12-25mm	0%	520 0
Galvanised	ST02Z/SGCC 1.0mm	-13%	560 5

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	21/12/2018	14/12/2018	Change	Change %
Rebar	3,009	2,974	35	1.18%
Wirerod	1,023	1,005	18	1.79%
Hot-rolled Coil	1,887	1,944	-57	-2.93%
Medium & Thick Plate	951	995	-44	-4.42%
Cold-rolled Coil	1,075	1,081	-6	-0.56%
Total	7,945	7,999	-54	-0.68%

<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	73.81	2.14	Mmi CFR Equivalent index for 12th October
Coke	2,160	0	2nd grade met coke, Tangshan, incl. tax
Steel Scrap	2,200	70	steel scrap (6mm) in Zhangjiagang, excl. tax
Billet Cost	2,046	-862	Q234, incl. tax
Rebar cost - Blast furnace	3,208	33	calculated based on theoretical weight, incl. tax
Rebar profit - Blast furnace	542	-23	based on Shanghai prices, incl. tax
Hot-rolled coil cost - Blast furnace	3,271	38	based on actual weight, incl. tax
Hot-rolled coil profit - Blast furnace	549	-38	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	
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%		
Pricing Point	Qingdao Port (FOT and CFR respectively)		FOT Qingdao Port		
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		

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: [www.mmiprices.com](http://www.mmiprices.com)

Data Exclusions*			
	62%	58%	65%
Port Index	0	0	0
Seaborne Index	0		0
Lump Index 62.5	0		

\* Number of price submissions for iron ore indices that were excluded from index calculations today as they were anomalous and could not be verified

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 28, 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	61.59%	2.33%	3.61%	0.100%	9.33%	PB Fines 62%	62.00%	2.60%	4.30%	0.090%	10.00%
Newman Fines	62.19%	2.48%	4.21%	0.090%	7.97%	Newman Fines	62.80%	2.20%	4.30%	0.080%	6.40%
MAC Fines	60.81%	2.30%	4.73%	0.090%	7.43%	MAC Fines	61.00%	2.70%	4.70%	0.110%	9.30%
Jimblebar Blended Fines	61.33%	2.88%	4.23%	0.110%	6.85%	Jimblebar Blended Fines	61.79%	2.67%	4.08%	0.115%	7.16%
Carajas Fines	64.86%	1.29%	2.07%	0.060%	8.10%	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	62.73%	1.53%	4.87%	0.070%	8.43%	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 28, 2018	SPECIFICATIONS APPLIED FOR 58% BRAND ASSESSMENTS										
	Fe	Alumina	Silica	Phos	Moisture						
SSF	56.53%	3.09%	6.18%	0.050%	9.19%						
FMG Blended Fines	58.25%	2.68%	5.64%	0.060%	7.44%						
Robe River	56.63%	2.88%	1.85%	0.040%	9.09%						
Western Fines	57.78%	2.92%	7.37%	0.060%	7.46%						
Atlas Fines	56.59%	2.55%	7.14%	0.080%	8.46%						
Yandi	57.29%	1.37%	6.37%	0.040%	9.00%						

BLOOMBERG TICKERS

PORT STOCK INDICES			
	FOT Qingdao (RMB/wet tonne)		CFR Qingdao Equivalent (USD/dry tonne)
IOP162	IRCNQ001		IRCNQ004
IOP158	IRCNQ002		IRCNQ005
IOP165	IRCNQ003		IRCNQ006

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