PACESETTER

OUR PEOPLE, YOUR ADVANTAGE

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YOUR TECHNICAL ADVANTAGE

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Certified WBENC Women's Business Enterprise

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YOUR TECHNICAL ADVANTAGE | 8.16.2016 - 8.22.2016

Steel is a material containing pure iron (Fe) combined with other elements such as carbon (C), manganese (Mn), silicon (Si), titanium (Ti), aluminum (Al), etc. in order to develop special properties.

•Steel is sometimes confused with pure iron, but there is a significant difference between the two:

–Steel

•More practical for commercial use

•Due to combinations of additives (elements such as carbon, manganese, etc.), possible attributes include toughness, abrasion resistance, form-ability and strength.

–Iron

•Expensive to produce

•Has insufficient hardness and toughness

•Pure iron is not used commercially

Steel has become the material of choice by modern society due to various reasons, but most importantly because of the following:

–Pound for pound, steel is the most inexpensive metal for many consumer products (cars, appliances, etc.)

–Steel is very versatile; it can be tailored to meet a wide range of product requirements.

How is Steel Produced?

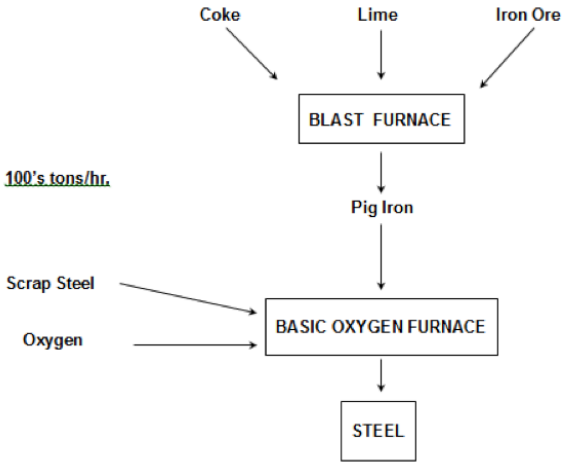
There are three (3) primary components of Pig Iron:

•Iron Ore = Primary source of iron.

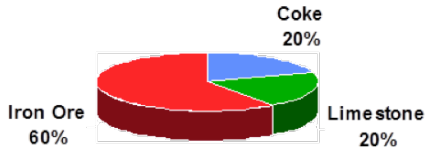
•Limestone = Flux used to remove impurities.

•Coal (Coke) = A fuel and reducing agent.

2.5 tons of raw material and a nearly equal amount of air are required to produce 1 ton of pig iron



Manufacture of Blast Furnace Pig Iron



Blast Furnace Chemical Reaction

Fe_2O_3	+	3C	=	2Fe	+	3CO	+	CO_2
Iron Oxide (ore)		Carbon (coal)		Iron (metal)		Carbon Monoxide (gas)		Carbon Dioxide (gas)

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The Basic Oxygen Process

•Developed in the 1950's

•Inputs

–Molten pig iron

–Scrap steel (up to 25% by weight)

–Alloys (i.e. Al, Fe, Mn, FeV, FeCb, etc.)

–Oxygen lance injected, removes impurities from the iron.

–Inert gas (i.e. Ar, N2), blown in from the bottom of the vessel to create a stirring effect.

•End Result = Liquid steel product which can be continuously cast.

Alloy Additions to Molten Steel

•Carbon (C)

–Primary strengthening agent

–Provides basic heat treating properties

–Beyond a certain level, can lead to decreased ductility and welding problems

–Commercial quality steel product carbon range is .02% to .15%

•Manganese (Mn)

–Multifunctional role

–Strengthens the steel without adversely affecting the weldability

–Desulfurizes the steel

–Commercial quality steel product will have between.20 and.50%Manganese

•Silicon (Si)

–Deoxidizes the molten iron

–Commercial quality steel product contains less than .035% Silicon.

•Sulfur (S)

–Impurity in the steel that evolves from the coke used in the blast furnace process

–Detrimental effect on the formability of the steel

–Commercial quality steel product contains less than .015% Sulfur

•Phosphorus (P)

–Strengthening agent

–Improves fatigue properties of steel in higher temperature applications

–Reduces ductility as it increases strength

–Typical commercial steel contains less than .035% Phosphorus

•Aluminum (Al)

–Added during the Basic Oxygen Process to deoxidize steel

–Preferred over Silicon because it ties up Nitrogen and stabilizes the grain structure

–Aluminum content of an Aluminum killed steel product typically ranges between .020 and .080%

•Vanadium (V)

–Strengthens the steel for high strength applications while maintaining formability

•Titanium (Ti)

–Added to the steel during the Basic Oxygen Process

–Creates a stabilized grain resulting in a soft, extremely ductile product

–Referred to as Deep Drawing Quality Steel

Conversion to Slab Product

The most common method now used to convert molten steel to a slab product is referred to as continuous casting.

•Advantages of Continuous Casting

–More efficient and productive

–Improved surface quality

–Improved internal quality

–Increased process yield

After this comes the process of Hot rolling in which the slab is transform in to a coil form, but that process and the subsequent steps in order to obtain a Galvanized coil will going to be review on a future occasion.

STEEL | 8.16.2016 - 8.22.2016

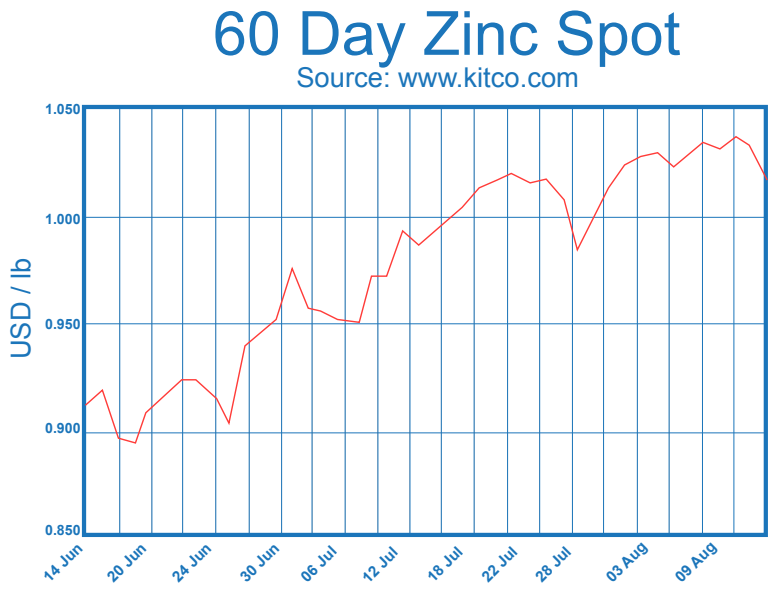
+ #1 heavy melt scrap is $209 per ton and #1 busheling scrap is $264 per ton.

- Raw steel production was only 72.6% of capacity.

- Domestic mill lead times pushed out over 7 weeks again.

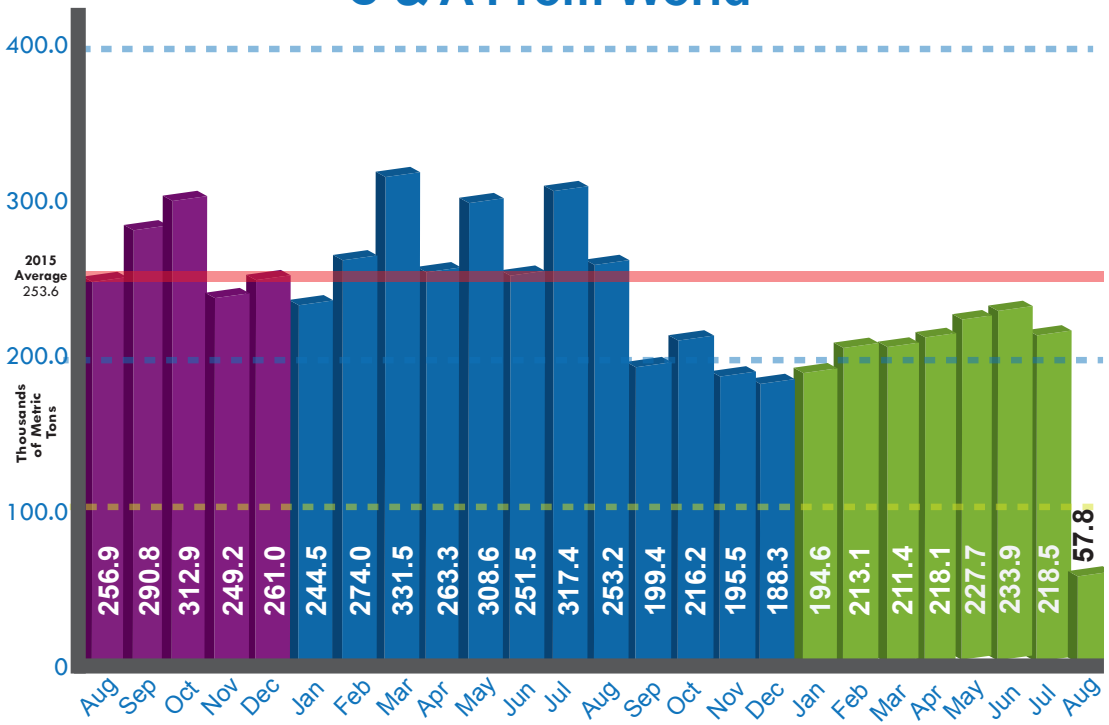
- Iron ore FOB Chinese ports is steady at $59 per dry metric ton. Chinese steel-making demand is keeping this commodity hot.

- Zinc pricing remains over $1.00 per pound.



- Galvanized imports for August will probably equal the July totals.

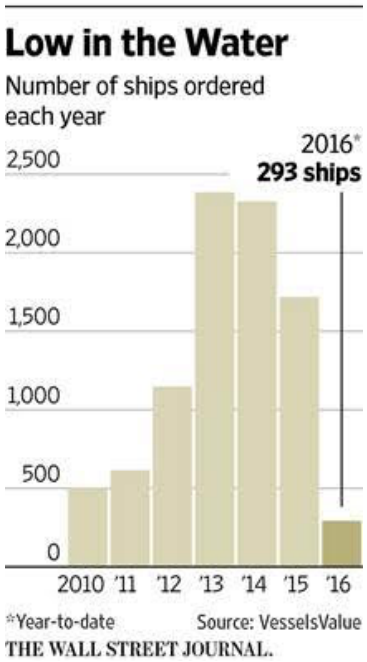
U.S. Imports of Sheets & Strip Galv Hot Dipped C & A From World



Source: US Department of Commerce, Enforement and Compliance | Graph last modified on: August 9, 2016
with Licensing Data colleleted through August 9, 2016. Commerece license data use for the last month appears in a different color
Data extracted from the import licenses are not official Census data

- According to China's Bureau of Statistics, July steel production was 66.81 million metric tons, up 2.6% from last year. Looks to me like China's steel sector is running full speed ahead in difference to what they print in the newspapers.

- New orders for ocean freight ships are at a record low and ocean freight carriers can't get rid of ships fast enough. This year, 1,000 ships with the combined capacity to haul 52 million metric tons of cargo will be dragged onto beaches and cut into scrap. The record for scrapping ships was in 2012 when 61 million tons of capacity was scrapped. The current global economic slowdown is the worst since the 2008 financial crisis. The ocean freight industry is working with around 30% more capacity than cargo, and that is keeping freight dangerously low.



+ The 2017 Nissan Titan pickup truck will offer a 5 year/100,000 mile bumper to bumper warranty, slam dunking the 3 year/36,000 mile warranties from GM, Ford, FCA, and Toyota. January through July ’16 Toyota Tundra sales were 65,440 units, while Ford F series trucks racked up 427,523 units. The Nissan Titan sold 7,242 units. Maybe this new warranty will get some attention. That’s what Hyundai did years ago, and it worked for them.

+ Automakers are trying to find the right balance of human and robot labor on their assembly lines. There is theory that, for now, the automation of labor could be at a peak. Automobiles have become so complex, and the various sub-models so numerous, and global platforms are required to meet local standards even though they outwardly look the same, that human labor is the only way to build the flexibility needed in modern assembly lines. “We’ve overstepped the limits of automation, there’s no question” says Markus Schaefer, head of production and supply chain management at Mercedes-Benz.

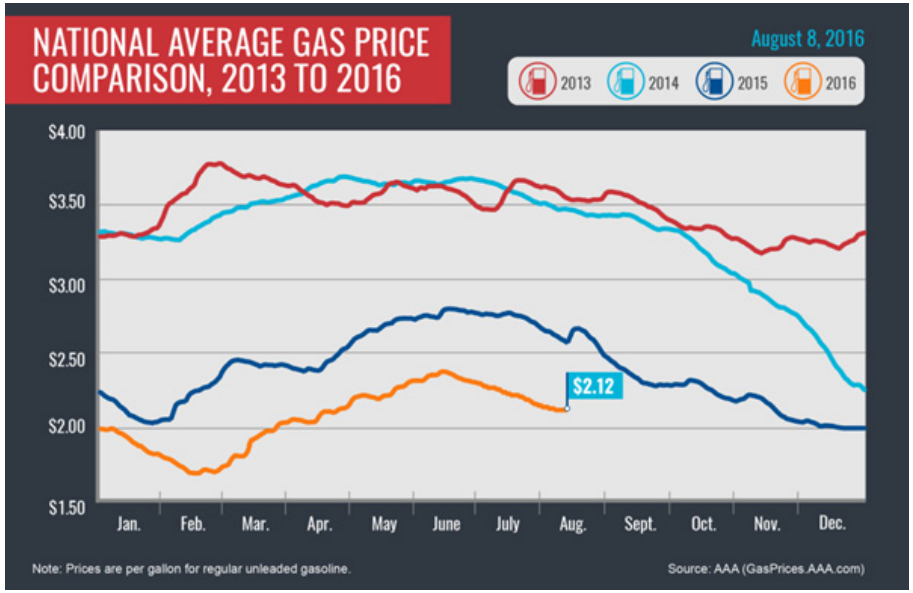
GENERAL | 8.16.2016 - 8.22.2016

+ Business Inventories rose .2% in June, lagging a nice jump in sales (1.2%). The stock to sales ratio fell to 1.39 to 1. That is good news for possible future demand to replenish inventory.

+ The Producer Price Index fell .4% in July due to lower food and energy costs.

+ Is the stock market in the USA too hot? For the first time since 1999 our three major stock markets all finished at record levels. Last Tuesday the Dow closed at 18,613, The S&P 500 closed at 2,185, and The Nasdaq closed at 5,228. Is the market too hot, or are we going to party like it's 1999 for a while longer?

+ Gasoline prices are still sliding. We are on the tail end of summer driving season, and there is still a glut of crude oil in stock in the US. It is very possible that we will see gasoline prices go under $2.00 per gallon soon. Crude oil inventory is still high (523 million barrels) and refineries are operating at 92.2% of capacity.



BILL'S ROUND-UP | 8.16.2016 - 8.22.2016

"Business inventories fell, providing opportunity for manufacturing to replenish stock. The Producer Price Index fell, keeping inflation under control for manufacturing. The stock market is at record levels and some say it will continue to escalate. Gasoline prices are still falling. Steel mills remain busy catching up their backlogs. Steel imports are steady but at lower levels than last year. Chinese steel mills are still rolling full speed ahead in difference to what they have been telling the world. Ocean freight cargo companies are wrestling with over capacity due to a global slowdown of demand for manufactured products. Automakers are trying to find the right balance between human and robotic labor. Nissan is trying to get a foothold into the U.S. truck market."

PARTING SHOT:

+ America will never be destroyed from the outside. If we falter and lose our freedoms, it will be because we destroyed ourselves.

– Abraham Lincoln (1809 to 1865)

Bill Feier, World Sourcing Manager

'TIL NEXT TIME | 8.23.2016

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