



# Material Impacts On The Precision Machining Industry

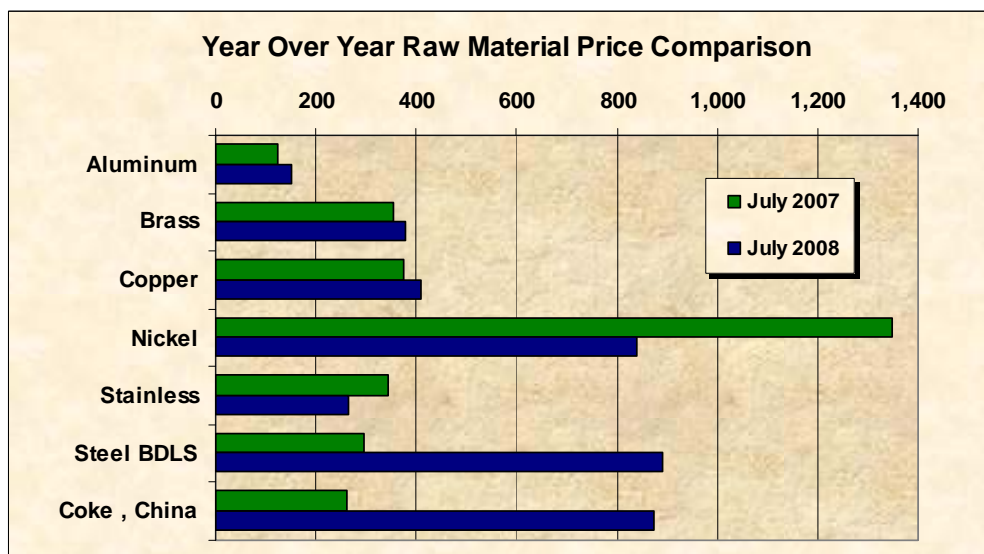
August 2008

## *Global Events, Local Effects*

### *Executive Summary*

*Are you enjoying the Olympics? I hope so, because the effects of China's efforts to clear the air for them have certainly had a measureable effect on the prices for our raw materials here in North America. "According to analysts, China has cut met coke output by 72% to avoid adding more polluting gases to the environment." Source: <http://www.business-standard.com/india/storypage.php?autono=329367>*

*Steel, up 114% since January. Coke up 215% so far this year. Aluminum, up 26% this year hit \$1.50 per pound on Comex July 11<sup>th</sup>. Copper high grade cathode over \$400 in July. Oil, Nickel and Stainless show some softening of price. Five of the seven items we track are up over same month last year:*



*Coke in China is on a tear due to tight supplies of good quality metallurgical (coking) coal and government ordered production cuts to get clean air for the Beijing Olympics. Manufacturing operations are being curtailed both by government mandate to clean the air and by lack of electricity.*

*The benchmark commodity that we follow, #1 Steel Bundles, Chicago, is no longer tracked due to changes in the way the automakers sell their stamping scrap. Effective with June 2008 data, we are reporting the AMM #1 Busheling, composite price (Chicago, Cleveland, and Pittsburgh) as our indicator for price of steel scrap. It has tracked essentially the same as #1 bundles over the last two years.*

*At the time of preparation of this report, Republic Engineered Products had announced a \$2.50 per cwt, \$50 per ton price increase on all wire and Cold Finished Bar products. The North American price of steel continues to be driven by global events including Coke production cutbacks in China, iron ore pricing in Australia and Brazil, and scrap buys by steelmakers in the Middle East.*

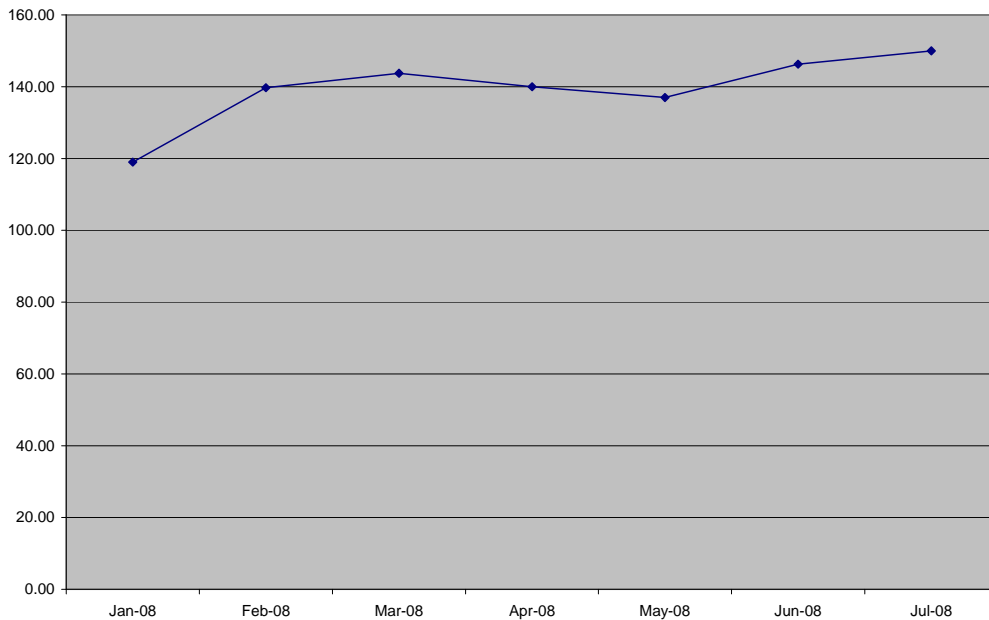
*Closer to home, Over 2,000 trucking company bankruptcies were recorded last year in fleets operating five or more trucks. The trend appears to be accelerating as 935 trucking firms filed for bankruptcy in first quarter 2008, according to a report from the Council of Supply Chain Management Professionals. This impacts us in higher costs for freight and lower demand for parts for OTR trucks...*

*Please see the Analysis of Foreign Currencies prepared by Georgetown Economic Services posted along with this report.*

*Why don't prices of metals drop when the price of their raw material constituents decrease? <http://en.wikipedia.org/wiki/Oligopoly>; Just in time for back to school: <http://www.youtube.com/watch?v=5BOPx8SL9F4>*

**Aluminum** (*cents per pound Comex Spot close*)

Aluminum 2007 (Comex spot close)



The average price of aluminum in 2006 was up 35.16% over the average in 2005, its now up 15.13% since January 2008.

<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (cents/lb)</i>	<i>June 2008</i>	<i>July 2008</i>
<i>Jan2008-Jan2007</i>	<b>-8.23</b>	<b>- 9.50</b>	<i>Maximum</i>	<b>146</b>	<b>150</b>
<i>July2008-Jan 2008</i>	<b>26.05</b>	<b>31.00</b>	<i>Most Frequent</i>	<b>133-134</b>	<b>134-135</b>

**Aluminum Association to NHTSA: Automotive Weight Reduction and Size-Based Standards Vital to Improving Fuel Economy and Emissions:**

"...there are also significant environmental benefits to down-weighting (vehicles) with aluminum because lighter vehicles burn less fuel and produce fewer tailpipe emissions. For *each pound of aluminum which replaces two pounds of conventional iron or steel, a net 20 pounds of CO2 equivalents can be saved over the typical lifetime of a vehicle.* In addition, most automotive aluminum is recycled, which saves 95 percent of the energy needed to produce the material and avoids 95 percent of the greenhouse gas emissions associated with primary aluminum production." *Emphasis ours.*

*Increased demand for aluminum in high volume automotive applications portend continued high prices for aluminum bar stock.*

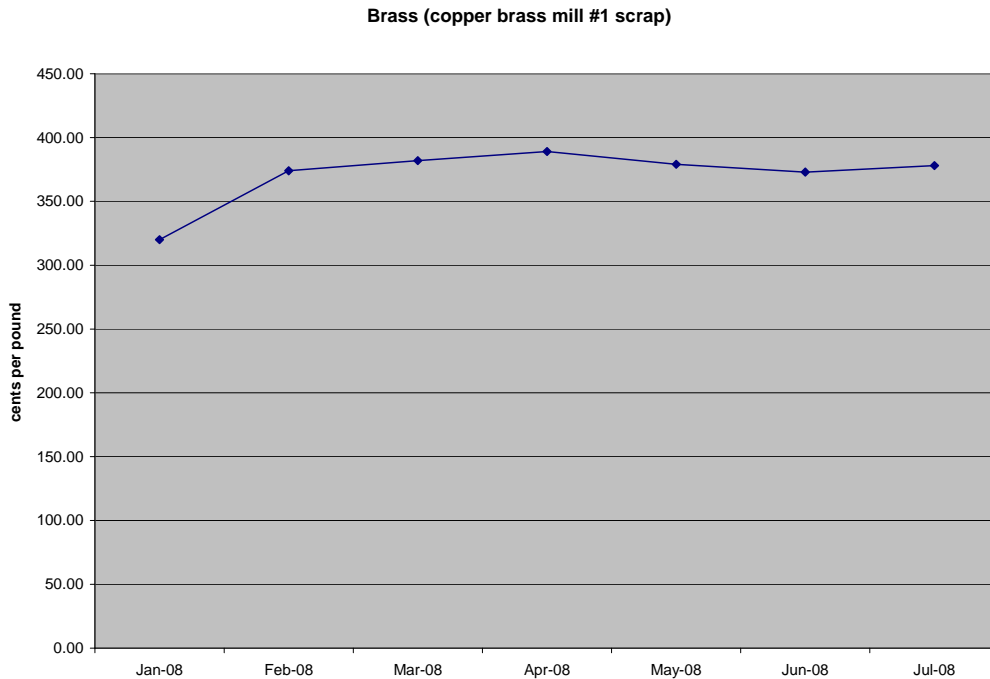
The Aluminum Association reports for June that the U.S. annual rate of primary aluminum production totaled 2,738,754 metric tons (tonnes) during June 2008, an increase of 7.7 percent over the June 2007 total of 2,543,101 tonnes. Compared to the previous month, the annual rate of production declined 1.5 percent from the May 2008 annual rate of 2,781,753 metric tonnes. The year-to-date annual rate of primary aluminum production totaled 2,763,775 tonnes, up 11.3 percent over the 2007 annual rate of 2,482,476. Actual production for the month of June 2008 totaled 224,488 tonnes.

**Average price in 2007: \$1.22 per pound**

(Energy is the main issue for aluminum producers, and increases in energy costs find their way quickly into the light metal's pricing. Recycling saves 95% of the energy needed to produce Aluminum. Increasing energy prices do not bode well for a strong and sustainable aluminum industry in North America. China is power short, which makes this material especially problematic for their planners.)

**Brass** (cents per pound copper brass mill number 1)

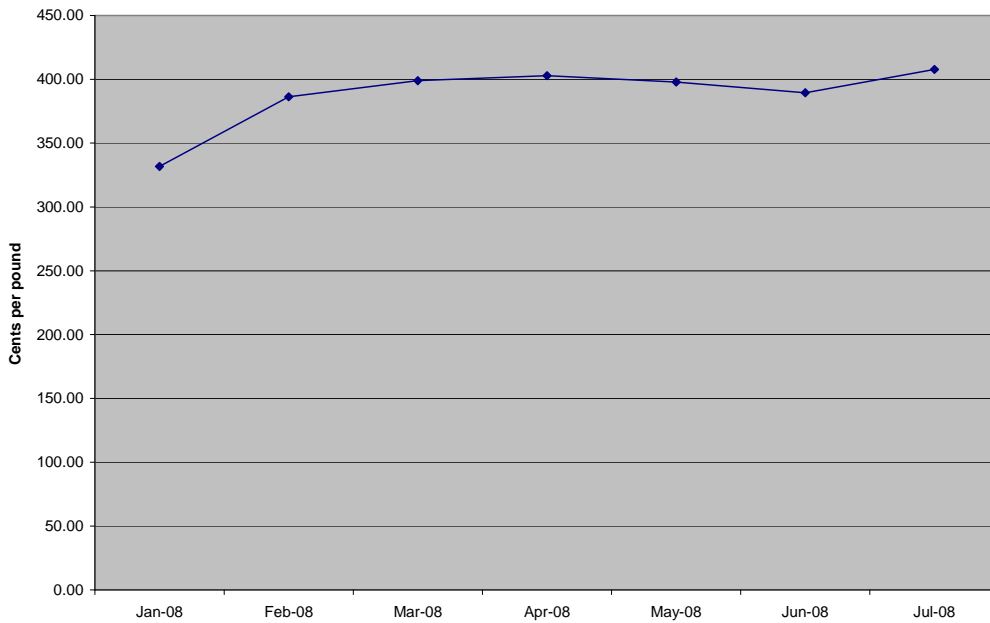
**Average price in 2007: \$3.28 per pound. Up 18.44% since January 2008.**



<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (cents/lb)</i>	<i>June 2008</i>	<i>July 2008</i>
<i>Jan2008-Jan2007</i>	<b>24.43</b>	<b>54.00</b>	<i>Maximum</i>	<b>373</b>	<b>378</b>
<i>July 2008-Jan 2008</i>	<b>18.13</b>	<b>58.00</b>	<i>Most Frequent</i>	<b>353</b>	<b>360</b>

**Copper** cents (per pound Comex high grade cathode, spot close price)

Copper (comex High grade cathode spot close)



<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (cents/lb)</i>	<i>June 2008</i>	<i>July 2008</i>
<i>Jan2008-Jan2007</i>	<b>28.98</b>	<b>66.55</b>	<i>Maximum</i>	<b>389.55</b>	<b>407.75</b>
<i>July 2008-Jan 2008</i>	<b>22.93</b>	<b>76.05</b>	<i>Most Frequent</i>	<b>355</b>	<b>371</b>

**Fuel surcharge remains at 45% above standard freight rate. Energy Surcharge remains Zero.**

The commodities that we track remain high, up 20% since January, despite the current housing slump and seasonality. According to the Copper and Brass Service Center Association, their shipments fell 1.4 percent in June compared with the previous month and were down 9.3 percent from June 2007.

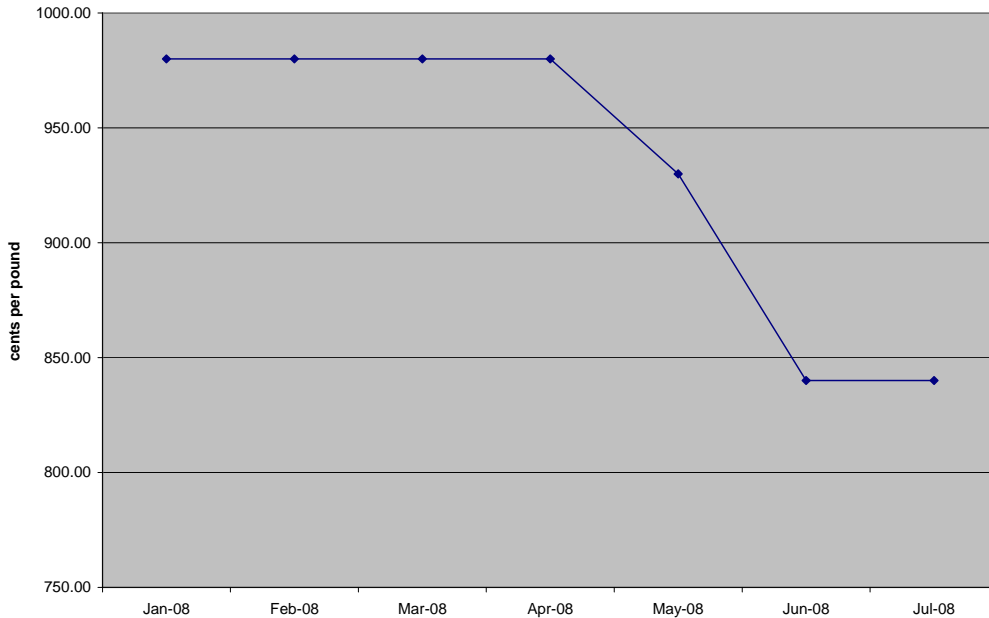
High metal values combined with vacant houses resulting from the mortgage mess results in daily news reports of vacant homes being stripped of copper plumbing and wiring and HVAC equipment.

According to Chinamining.com, China's copper imports dropped 24.4percent in June from the year-ago period. However, data from China Customs shows that for the first seven months of 2008, China imported 3.42 million tonnes of copper scrap, up around 14.5 percent over last year.

**Average price in 2007: \$3.39 per pound.**

**Nickel** (cents per pound, New Clips and Solids Chicago)

Nickel scrap (new clips and solids)



Interval	% Change	\$ Change	Commodity Price (cents/lb)	June 2008	July 2008
Jan2008-Jan2007	<b>-49.09</b>	<b>-270.00</b>	Maximum	<b>840</b>	<b>840</b>
July 2008-Jan 2008	<b>-14.29</b>	<b>-140.00</b>	Most Frequent	<b>840</b>	<b>840</b>

**The price of Nickel for June and July 2008 is \$8.40 per pound, which is below the 2006 average price of \$869. The Nickel commodity we track is down 22.93% this year.**

Nickel prices have declined since April based on weakening demand for stainless steel in China, where overstocks are present, and factory shut downs associated with the Olympic Games are presumed factors.

Nickel Usage in Nickel alloys is forecast to be CAGR of 5% until 2012 according to a presentation on the International Nickel Study Group Website. (Resulting in 25% additional demand!)

In North America, consumers are delaying purchases on expectations of declining surcharges based on the falling prices.

**Average price in 2007: \$12.01 per pound, 38% above 2006 avg. of \$869.17.**

*(Nickel is a key component of many steel alloy systems, stainless steels, superalloys, and many other nickel base materials.)*

## Stainless

Stainless Surcharges: Smolz+ Bickenbach USA *Stainless 303 per pound Raw Materials Surcharge-* August \$1.35 last posted on website. These are calculated on a two month lag.

### Stainless Steel

Sliding Nickel prices and slow demand are the primary features in the stainless market as we go to press.

David Harquist comments on the impact of China in the Stainless Steel Market:

**Link:** <http://tinyurl.com/6fpoyd>

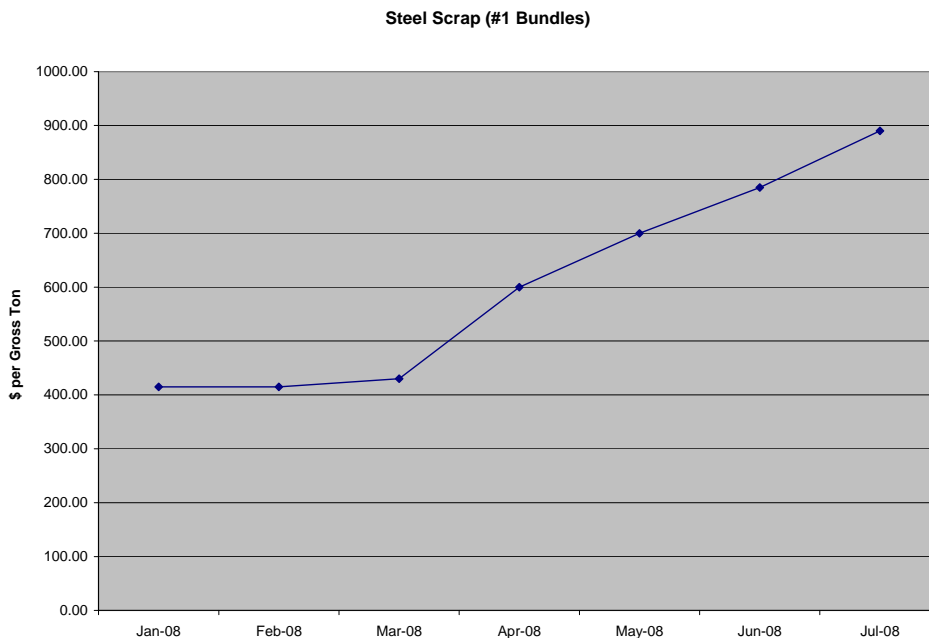
Stainless imports decreased slightly (-4.78%), due to decreases in each individual stainless product.

**Link:** [http://www.ita.doc.gov/press/press\\_releases/2008/steel\\_072908.asp](http://www.ita.doc.gov/press/press_releases/2008/steel_072908.asp)

**No, there is NOT any Hexavalent Chromium in Stainless Steels:**

[http://www.ssina.com/news/releases/pdf\\_releases/02\\_22\\_06.pdf](http://www.ssina.com/news/releases/pdf_releases/02_22_06.pdf)

## Steel *(dollars per gross ton, Number 1 Busheling composite, Chicago, Cleveland, and Pittsburgh)*



<i>Interval</i>	<i>% Change</i>	<i>\$ Change</i>	<i>Commodity Price (\$/gr.ton)</i>	<i>June 2008</i>	<i>July 2008</i>
<i>Jan2008-Jan2007</i>	<b>55.36</b>	<b>155.00</b>	<i>Maximum</i>	<b>785</b>	<b>890</b>
<i>July 2008-Jan 2008</i>	<b>114.46</b>	<b>475</b>	<i>Most Frequent</i>	<b>785</b>	<b>890</b>

*Surcharges: September 2008 Material Surcharges for Cold Finished Bars: \$36.96; no additional alloy surcharges applicable. Base prices increased \$2.50 per cwt effective with Shipments September1, 2008.*

**Important notice:**

*The benchmark commodity that we follow, #1 Steel Bundles, Chicago, is no longer tracked due to changes in the way the automakers sell their stamping scrap. Effective with June 2008 data, we are reporting the AMM #1 Busheling, composite price (Chicago, Cleveland, and Pittsburgh) as our indicator for price of steel scrap. This indicator has tracked essentially the same as #1 bundles over the last two years.*

***Steel Scrap Price up 114% YTD; China Coke price up 215.88% YTD; Now a word from the bull:***

Financial times: “Global steel prices are set to fall steeply this year, bringing to an abrupt end a remarkable boom for the world steel industry, according to Peter Marcus, a leading industry consultant.

“Mr. Marcus said he was “overwhelmingly negative” about the outlook for steel prices in the remaining months of 2008, after a 12-month period in which prices have increased by more than 60 per cent, even in the face of a slackening global economy.

He said in a report the steel industry could be on the brink of a “supply/demand disaster” due to an upswing in global steel production coinciding with a faltering in global steel consumption, as credit problems and weak consumer and industry demand finally feed through to steel plants. Mr. Marcus, managing partner at the US consultancy in World Steel Dynamics, is one of the steel industry’s most widely followed analysts.”

Here’s link to the full Financial Times story:

<http://www.ft.com/cms/s/0/6c2f7884-45f7-11dd-9009-0000779fd2ac.html>

**Production, Shipments, Inventories**

**Imports:** Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 2,675,000 net tons (NT) of steel in June 2008, including 2,068,000 NT of finished steel (up 7 percent and 1 percent, respectively, vs. May final data). While total and finished steel imports through the first six months of 2008 are down 11 percent and 13 percent, respectively vs. the same period in 2007, the monthly average for finished imports in the most recent 3-month period (April-June 2008) is up 2 percent vs. the monthly average in the previous 3 months

(January-March 2008). Total and finished imports on an annualized basis this year are each down 5 percent vs. 2007. On an annualized basis, total imports of steel in 2008 would be 31.8 million NT.

**Mills Production:** The American Iron and Steel Institute (AISI) reported that for the month of May 2008, U.S. steel mills shipped 9,008,000 net tons, a 0.8 percent decrease from the 9,087,000 net tons shipped in May 2007 and a 4.2 percent decrease from the 9,403,000 net tons shipped in the previous month, April 2008.

A year-to-year comparison of year-to-date shipments shows the following changes within major market classifications: service centers and distributors, up 4.3 percent; automotive, down 4.1 percent; construction and contractors' products, down 2.7 percent; and oil and gas, up 5.6 percent.

In the week ending August 9, 2008, domestic raw steel production was 2,142,000 net tons while the capability utilization rate was 89.8 percent. Production was 2,075,000 tons in the week ending August 9, 2007, while the capability utilization then was 87.7 percent. The current week production represents a 3.3 percent increase from the same period in the previous year. Production for the week ending August 9, 2008 is up 1.4 percent from the previous week ending August 2, 2008 when production was 2,113,000 tons and the rate of capability utilization was 88.6 percent.

Adjusted year-to-date production through August 9, 2008 was 67,097,000 tons, at a capability utilization rate of 88.7 percent. That is a 2.5 percent increase from the 65,487,000 tons during the same period last year, when the capability utilization rate was 86.1 percent.

Source: [www.steel.org](http://www.steel.org)

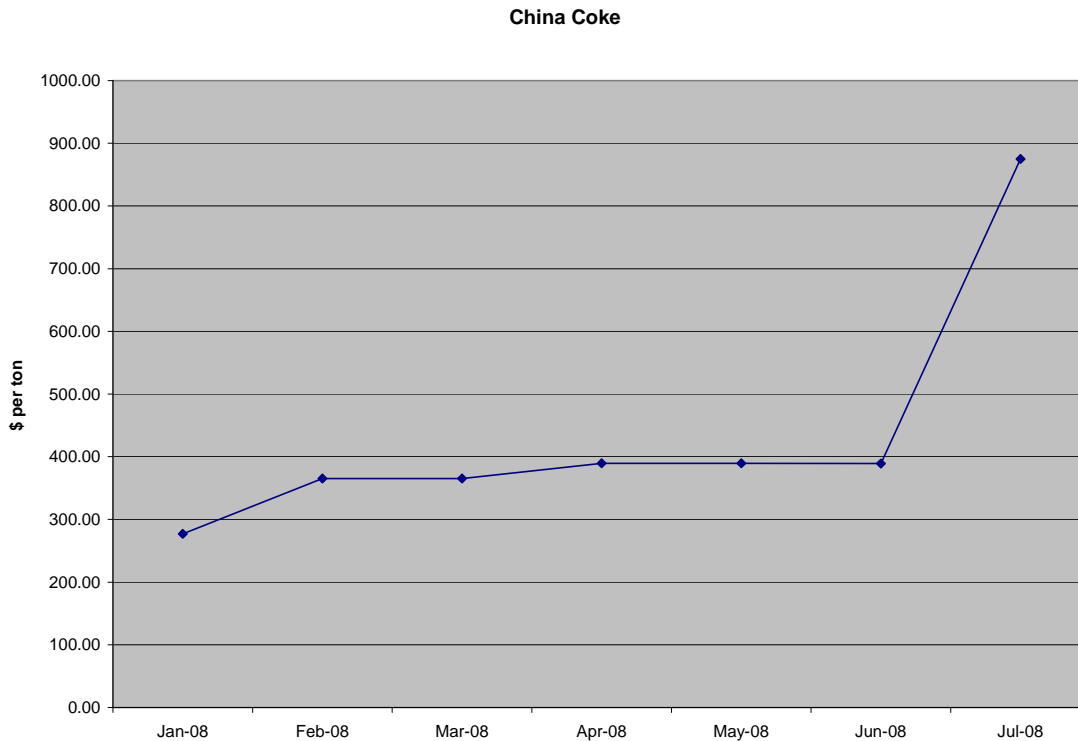
**Service Centers Shipments:** Steel shipments from U.S. metals service centers totaled 4.2 million tons in June, down 4.3% from shipments during June 2007. First-half 2008 steel-product shipments totaled nearly 26.3 million tons, off 3.8% from a year ago. Inventories, at nearly 12.9 million tons of steel products, were down 7.3% from last year and, at current shipping rates, represent a 3.1-month supply.

In Canada, steel product shipments from metals service centers totaled 293,000 tons in June, down 6.0% from June 2007, and first-half shipments of almost 1.9 million tons were down 2.7% from a year ago. Canadian service center steel inventories of about 1.06 million tons at the end of June were down 12.1% from a year ago and, at current shipping rates, represent a 3.6-month supply.

Source: [www.MSCI.org](http://www.MSCI.org)

**Average price in 2007: \$319.17 per gross ton, up 8.8% over 2006 average.**

## Coke (Chinese) (\$ per metric tonne)



**The average price of Chinese Coke in 2006 was down 32.1% over the average in 2005. What goes down can go up! The current YTY % change of coke is up 215.88% in July.**

Last report we reported: “Coke in China is on a tear due to tight supplies of good quality metallurgical (coking) coal. Coking coal prices are up 60-70% since January. We have seen a report that had Chinese coke for export over \$600 FOB. *While we are seeing a number of conflicting prices for export coke out of China, all signs are pointing to higher steel prices down the road as a result of coke’s current record pricing.*”

Today we are seeing prices in the \$875 per tonne range. And steel scrap indicator is up 114% YTD as well.

**Average price in 2006: \$141.75 per tonne.**

(Coke is used in blast furnaces to make hot metal iron for use in the basic oxygen steelmaking process. China accounts for half of the world’s supply of coke, one third of which went to the European Union.)

## China Developments

*Are you enjoying the Olympics? I hope so, because the effects of China's efforts to clear the air for them have certainly had a measureable effect on the prices for our raw materials here in North America. "According to analysts, China has cut met coke output by 72% to avoid adding more polluting gases to the environment." Source:*  
<http://www.business-standard.com/india/storypage.php?autono=329367>

*"The government has ordered Taihang Hebei to shut down its Beijing operations for two months starting on July 20, until both the Olympics and the Paralympics (for handicapped athletes), slated to run from Sept. 6-17, are over." (Ed. Note- Nice photo here)*  
<http://www.spiegel.de/international/business/0,1518,564224,00.html>

*"China's sprawling industrial heartland is braced for an electricity crisis as the closure of unsafe coalmines before the Olympic Games and the rising price of coal have left many power stations either without the fuel they need or unable to make a profit. Energy experts believe that China's coal shortage could trigger its worst spate of blackouts and brownouts in four years, hitting the metals and manufacturing sectors especially hard."*  
[http://business.timesonline.co.uk/tol/business/industry\\_sectors/natural\\_resources/article4425801.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article4425801.ece)

David Harquist comments on the affect of China in the Stainless Steel Market really complete analysis!

*Link:* <http://tinyurl.com/6fpoyd>

**Currency:** Still no substantive action on the revaluation of the Yuan.

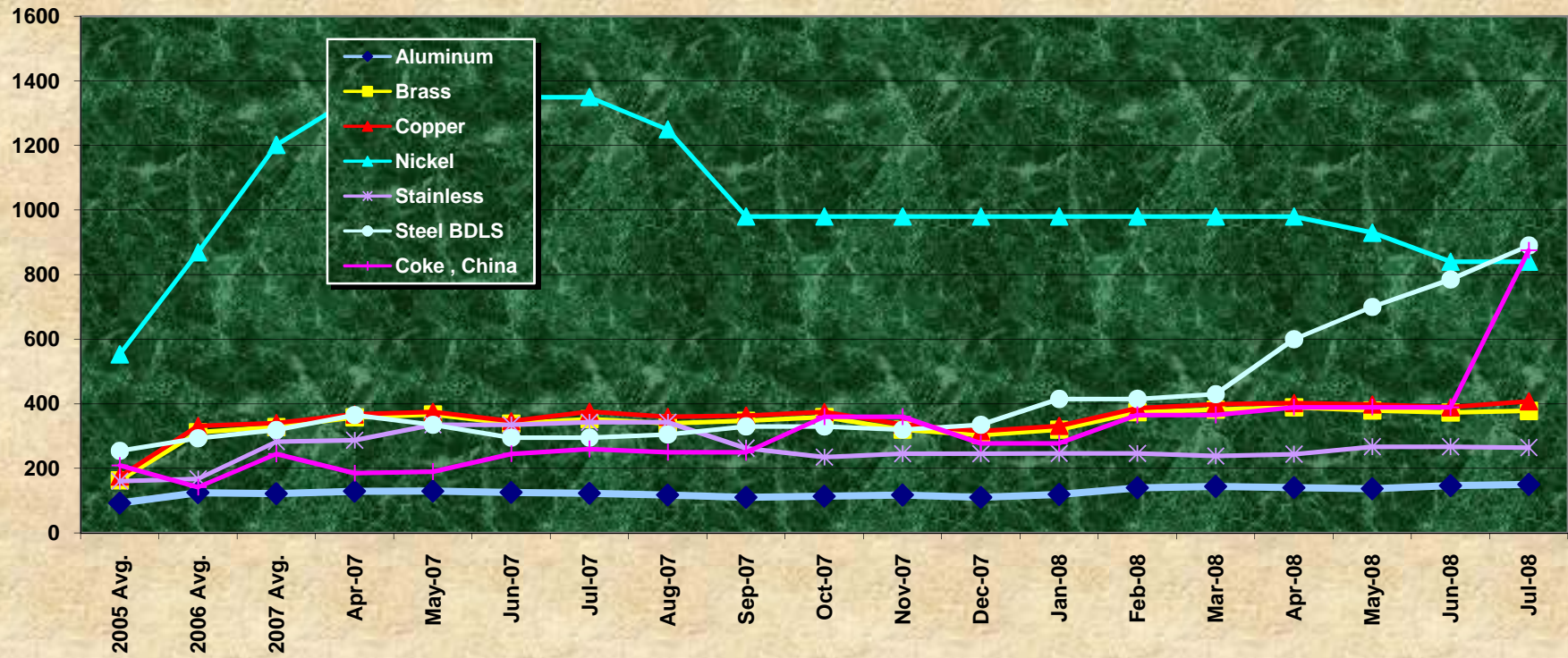
*Please see the Analysis of Foreign Currencies prepared by Georgetown Economic Services posted along with this report.*

The federal government's lack of **ACTION** on the manipulation of currency exchange rates by the Chinese government remains a critical concern for the sustainability of North American Manufacturing. *If not now, in an election year, then when?*

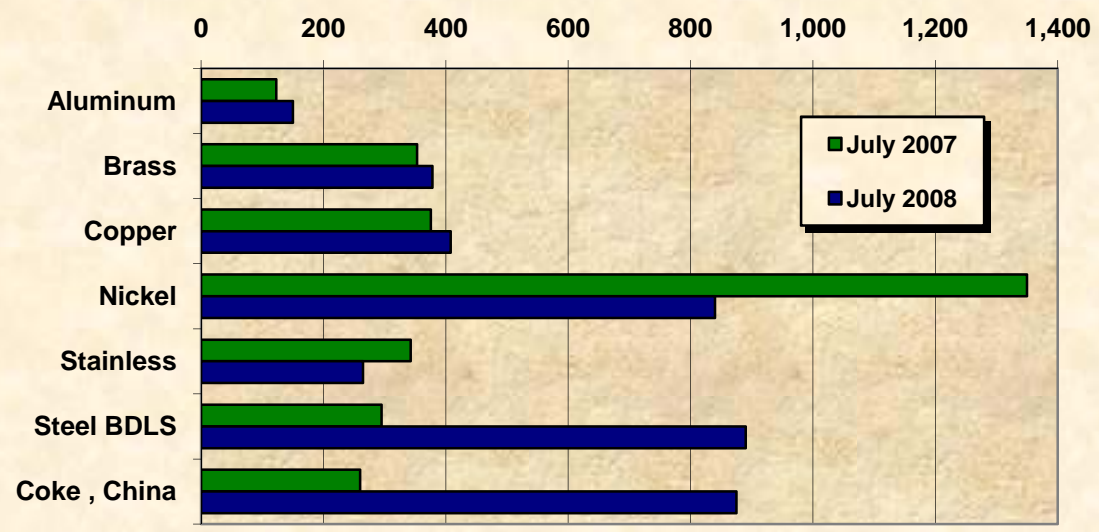
*-Miles Free*

Director, Industry Research and Technology  
Precision Machined Products Association

**PMPA RAW MATERIAL PRICE TRENDS**



**Year Over Year Raw Material Price Comparison**



## PMPA Raw Materials Index

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
<b>2005 Avg.</b>	92.19	162.75	174.23	553.33	160.50	254.58	208.75
<b>2006 Avg.</b>	124.62	311.58	331.19	869.17	167.50	293.25	141.75
<b>2007 Avg.</b>	121.49	328.17	339.86	1201.67	282.65	319.17	244.75
<b>Apr-07</b>	128.85	358.00	367.40	1350.00	287.00	365.00	185.00
<b>May-07</b>	129.25	367.00	375.05	1350.00	335.00	335.00	190.00
<b>Jun-07</b>	125.35	338.50	346.55	1350.00	335.00	295.00	245.00
<b>Jul-07</b>	122.65	353.00	375.40	1350.00	342.80	295.00	260.00
<b>Aug-07</b>	117.30	339.00	359.50	1250.00	342.80	305.00	250.00
<b>Sep-07</b>	110.00	347.00	363.60	980.00	262.63	330.00	250.00
<b>Oct-07</b>	113.25	359.00	374.95	980.00	235.04	330.00	360.00
<b>Nov-07</b>	117.25	320.00	335.60	980.00	245.25	320.00	360.00
<b>Dec-07</b>	110.00	303.00	315.50	980.00	245.25	335.00	277.00
<b>Jan-08</b>	119.00	320.00	331.70	980.00	246.06	415.00	277.00
<b>Feb-08</b>	139.75	374.00	386.35	980.00	246.06	415.00	365.30
<b>Mar-08</b>	143.75	382.00	398.95	980.00	238.62	430.00	365.30
<b>Apr-08</b>	140.00	389.00	402.80	980.00	244.09	600.00	389.40
<b>May-08</b>	137.00	379.00	397.85	930.00	267.10	700.00	389.40
<b>Jun-08</b>	146.30	373.00	389.55	840.00	267.10	785.00	389.00
<b>Jul-08</b>	150.00	378.00	407.75	840.00	264.47	890.00	875.00
Jan08- Jan 07 <b>\$Change</b>	<b>-9.50</b>	<b>54.00</b>	<b>66.55</b>	<b>-270.00</b>	<b>3.06</b>	<b>155.00</b>	<b>92.00</b>
Jan08-Jan07 <b>%Change</b>	<b>-7.39</b>	<b>20.30</b>	<b>25.10</b>	<b>-21.60</b>	<b>1.26</b>	<b>59.62</b>	<b>49.73</b>
Jan08- Jul08 <b>\$Change</b>	<b>31.00</b>	<b>58.00</b>	<b>76.05</b>	<b>-140.00</b>	<b>18.41</b>	<b>475.00</b>	<b>598.00</b>
Jan08-Jul08 <b>%Change</b>	<b>26.05</b>	<b>18.13</b>	<b>22.93</b>	<b>-14.29</b>	<b>7.48</b>	<b>114.46</b>	<b>215.88</b>
2005 Average	<b>92.19</b>	<b>162.75</b>	<b>174.23</b>	<b>553.33</b>	<b>160.50</b>	<b>254.58</b>	<b>208.75</b>
2006 Average	<b>124.62</b>	<b>311.58</b>	<b>331.19</b>	<b>869.17</b>	<b>167.50</b>	<b>293.25</b>	<b>141.75</b>
2007 Average	<b>121.49</b>	<b>328.17</b>	<b>339.86</b>	<b>1201.67</b>	<b>282.65</b>	<b>319.17</b>	<b>244.75</b>
2008 YTD Average	<b>139.40</b>	<b>370.71</b>	<b>387.85</b>	<b>932.86</b>	<b>253.36</b>	<b>605.00</b>	<b>435.77</b>
<b>YTY%Change</b>	<b>6.00</b>	<b>3.27</b>	<b>6.08</b>	<b>-31.11</b>	<b>-20.27</b>	<b>108.96</b>	<b>104.95</b>

Table A

## PMPA Raw Materials Index

Prices are as published, do not include surcharges.

**Aluminum** , Comex Spot close, cents/pound

**Brass Scrap**, Copper Brass mill #1, cents/pound

**Copper**, Comex High Grade Cathode, cents/pound

**Nickel**, Scrap clips and solids, cents per pound

**Stainless**, 303 CD bars, cents/pound

**SteelBdls, #1**, AMM Chicago, \$/gross Ton

**Coke**- anecdotal reports

### ***About the commodities selected for tracking:***

The items selected were chosen as indicators of costs for the materials commonly used by our industry.

They were selected because they were available and published, rather than a transaction price which might be confounded with other commercial objectives or geographic market peculiarities.

**Aluminum**- The use of the Comex Spot close price should need no explanation.

**Brass Scrap, Copper Brass mill, #1** was chosen as indicative of the general trend for high quality Brass Scrap for recycling.

**Copper, Comex High Grade Cathode** was chosen as indicative of costs for "new Copper" to be added to the existing Brass Metal inventory available.

**Nickel, Scrap clips and solids** was chosen as a proxy indicator for understanding Stainless Steel and High Temp alloys which typically are high % Nickel content. (303-8-10%; 316 10-12%; Hastelloy- Greater than 50%)

**Stainless**- 303 bars this number is published and can provide a "calibration" of your actual numbers to compare to your own experience.

**Steel Bdls #1- AMM Chicago**. This indicator was selected as it is indicative of make up of Electric Furnace process Steels for Special bar quality. While other scrap types are blended into a heat, the #1 bundle indicator is the best glimpse of price vs quality for electric furnace melted steels. Typically 95% or more of an electric furnace melt is scrap. This indicator was also chosen because it plays a part in the calculation of some suppliers material surcharges.

**Coke**- Coke is used in blast furnace production of Iron in order to produce steel by the Basic Oxygen Process (BOP). Blast furnaces use the coke to provide support for the burden (iron ore, limestone, bushellings, sinter etc.), sensible heat, and carbon monoxide reactant to reduce the oxide in the ore to pure iron. Coke itself is produced by blending a mixture of low- and high- volatility and ash coals and processing them at very high temperatures to distill out volatile organics leaving a strong porous cellular solid which is the critical ingredient for the Blast furnace- BOP producer.

This process is daunting from an environmental impact point of view. ***Without coke, there is no blast furnace iron; Without blast furnace iron, there is no BOP steel.***

***Quarterly averages have been calculated and used for this report for years prior to 2005 in order to tidy up the presentation of data.***

Miles Free

**Quarterly Averages  
PMPA Material Impacts**

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
<b>2003</b>	65.60	77.50	78.21	310.23	111.00	114.55	
	65.84	79.48	80.15	312.50	105.00	124.05	
	66.77	81.93	82.02	325.12	102.00	131.00	
<b>3rd Qtr.</b>	66.07	79.64	80.13	315.95	106.00	123.20	
	69.79	87.04	88.20	359.67	102.00	132.00	
	70.67	92.22	92.76	419.72	105.33	145.33	
	73.52	98.76	99.67	452.50	106.00	162.43	
<b>4th Qtr.</b>	71.33	92.67	93.54	410.63	104.44	146.59	
<b>2004</b>	76.29	108.80	110.28	562.50	106.00	182.00	
	80.40	120.00	121.60	565.00	106.00	275.00	182.00
	84.65	137.00	139.70	525.00	121.50	295.00	460.00
<b>1st Qtr.</b>	80.45	121.93	123.86	550.83	111.17	250.67	321.00
	88.65	136.00	137.10	500.00	121.50	270.00	450.00
	80.85	123.50	124.70	425.00	121.50	240.00	410.00
	83.45	128.00	129.25	500.00	121.50	250.00	325.00
<b>2nd Qtr.</b>	84.32	129.17	130.35	475.00	121.50	253.33	395.00
	84.30	130.00	131.30	550.00	121.50	395.00	
	84.30	131.00	131.55	520.00	121.50	395.00	
	90.95	135.00	139.90	520.00	153.50	375.00	310.5
<b>3rd Qtr.</b>	86.52	132.00	134.25	530.00	132.17	388.33	310.50
	91.30	142.00	147.35	600.00	157.00	415.00	239.00
	89.45	140.00	144.50	500.00	157.00	430.00	239.00
	94.25	145.00	149.10	500.00	157.00	430.00	280.00
<b>4th Qtr.</b>	91.67	142.33	146.98	533.33	157.00	425.00	252.67
<b>2005</b>	93.60	145.00	149.50	500.00	157.00	370.00	280.00
	95.05	144.00	150.25	550.00	157.00	315.00	230.00
	96.65	146.00	151.05	550.00	157.00	255.00	230.00
<b>1st Qtr.</b>	95.10	145.00	150.27	533.33	157.00	313.33	246.67
	93.50	149.00	154.20	600.00	157.00	270.00	230.00
	85.50	144.00	161.40	650.00	160.00	215.00	230.00
	80.25	149.00	153.00	650.00	160.00	145.00	210.00
<b>2nd Qtr.</b>	86.42	147.33	156.20	633.33	159.00	210.00	223.33
	84.40	153.00	163.00	560.00	160.00	170.00	210.00
	89.80	168.00	177.95	540.00	160.00	230.00	210.00
	89.00	173.00	187.65	540.00	160.00	285.00	210.00
<b>3rd Qtr.</b>	87.73	164.67	176.20	546.67	160.00	228.33	210.00
	91.90	181.00	196.80	520.00	166.00	235.00	185.00
	101.55	193.00	218.00	480.00	166.00	285.00	130.00
	105.10	208.00	228.00	500.00	166.00	280.00	150.00
<b>4th Qtr.</b>	99.52	194.00	214.27	500.00	166.00	266.67	155.00
<b>2005 Average</b>	92.19	162.75	174.23	553.33	160.50	254.58	208.75

Table A Supplemental Calculations

**Quarterly Averages  
PMPA Material Impacts**

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
<b>2006</b>	115.50	221.00	229.65	550.00	166.00	280.00	120.00
	122.25	229.00	233.65	550.00	166.00	275.00	148.00
	116.50	245.00	250.35	550.00	135.00	294.00	148.00
<b>1st Qtr.</b>	118.08	231.67	237.88	550.00	155.67	283.00	138.67
	130.60	320.00	348.30	700.00	135.00	294.00	138.00
	146.00	373.50	407.55	810.00	135.00	315.00	138.00
	120.00	345.00	369.10	810.00	135.00	342.00	140.00
<b>2nd Qtr.</b>	132.20	346.17	374.98	773.33	135.00	317.00	138.67
	121.50	357.00	382.95	910.00	135.00	342.00	140.00
	116.60	351.00	366.50	1150.00	135.00	342.00	125.00
	122.25	348.00	372.20	1150.00	135.00	285.00	125.00
<b>3rd Qtr.</b>	120.12	352.00	373.88	1070.00	135.00	323.00	130.00
	129.10	327.50	356.00	1050.00	245.00	275.00	164.50
	127.10	318.00	334.55	1050.00	245.00	245.00	164.50
	128.00	304.00	323.45	1150.00	243.00	230.00	150.00
<b>4th Qtr.</b>	128.07	316.50	338.00	1083.33	244.33	250.00	159.67
<b>2006 Average</b>	124.62	311.58	331.19	869.17	167.50	293.25	141.75
<b>2007</b>	128.50	266.00	265.15	1250.00	243.00	260.00	185.00
	130.00	281.00	285.25	1250.00	253.00	295.00	185.00
	125.50	306.50	314.35	1350.00	265.00	365.00	190.00
<b>1st Qtr.</b>	128.00	284.50	288.25	1283.33	253.67	306.67	186.67
	128.85	358.00	367.40	1350.00	287.00	365.00	185.00
	129.25	367.00	375.05	1350.00	335.00	335.00	190.00
	125.35	338.50	346.55	1350.00	335.00	295.00	245.00
<b>2nd Qtr.</b>	127.82	354.50	363.00	1350.00	319.00	331.67	206.67
	122.65	353.00	375.40	1350.00	342.80	295.00	260.00
	117.30	339.00	359.50	1250.00	342.80	305.00	250.00
	110.00	347.00	363.60	980.00	262.63	330.00	250.00
<b>3rd Qtr.</b>	116.65	346.33	366.17	1193.33	316.08	310.00	253.33
	113.25	359.00	374.95	980.00	235.04	330.00	360.00
	117.25	320.00	335.60	980.00	245.25	320.00	360.00
	110.00	303.00	315.50	980.00	245.25	335.00	277.00
<b>4th Qtr.</b>	113.50	327.33	342.02	980.00	241.85	328.33	332.33
<b>2007 Average</b>	121.49	328.17	339.86	1201.67	282.65	319.17	244.75
<b>2008</b>	119.00	320.00	331.70	980.00	246.06	415.00	277.00
	139.75	374.00	386.35	980.00	246.06	415.00	365.30
	143.75	382.00	398.95	980.00	238.62	430.00	365.30
<b>1st Qtr.</b>	134.17	358.67	372.33	980.00	243.58	420.00	335.87

Table A Supplemental Calculations

**Quarterly Averages  
PMPA Material Impacts**

	<b>Aluminum</b>	<b>Brass</b>	<b>Copper</b>	<b>Nickel</b>	<b>Stainless</b>	<b>Steel BDLS</b>	<b>Coke , China</b>
	140.00	389.00	402.80	980.00	244.09	600.00	389.40
	137.00	379.00	397.85	930.00	267.10	700.00	389.40
	146.30	373.00	389.55	840.00	267.10	785.00	389.00
<b>2nd Qtr.</b>	141.10	380.33	396.73	916.67	259.43	695.00	389.27