

STRATEGIC METALS

Your monthly guide to the latest information on the world's strategic metals

Strategic Metals Key to Green Technology

Although demand for approximately 90% of manganese, 75% of molybdenum and 13% of magnesium is accounted for by the global steel industry, these three strategic metals are becoming highly important to the future of emerging green technologies.

Manganese (Mn)

New applications of manganese are constantly reported. Of particular interest is a new lithium-ion battery that contains a manganese-based cathode. The application has been launched by Japan's technology company **Hitachi Limited** and the new battery is expected to double the life of the batteries besides having a higher electrical output. Hitachi has carried out preliminary tests and the product looks promising. It could play a pivotal role in green energy production, both solar and wind, in electric and hybrid automobiles, and in cell phones and laptops.

Another eco-friendly application of manganese is attempting to utilize the ability of manganese dioxide to absorb carbon dioxide. Scientists at Japan's **Kyoto University** are working on reproducing the process of photosynthesis and effectively reducing carbon emissions from the atmosphere. The success of the technology could play a critical role in the future of a green earth.

Magnesium (Mg)

Research workers at **Israel's Bar-Ilan University** and at the **California Institute of Technology** in Pasadena, and engineers at **MagPower** in British Columbia are exploring ways of extracting energy from magnesium and utilizing its inherent capacity to store large

quantities of energy. The success of such a technology could prove to be a blessing for the renewable energy business. A big hurdle in commercializing the technology is however, the high costs involved in extracting magnesium.

To tackle the issue, Dr. Takashi Yabe of Japan's **Tokyo Institute of Technology** is developing a process that uses solar power. To make solar power generation less costly, he is using small Fresnel lenses instead of concentrated solar collectors. Magnesium is extracted from seawater by using solar energy to power a laser that heats and ultimately burns magnesium oxide. Dr. Yabe's demonstration plant, built in partnership with Japan's **Mitsubishi Corporation**, can now extract 80 watts of power, which can in turn extract 70% of magnesium from seawater. He hopes to build a commercial model later this year.

Molybdenum (Mo)

Although Molybdenum has been used for many years to make stainless steel, demand for this type of steel is increasing in the green industry due to its requirement in the production of pipes and tanks which hold and transport biofuels, which are corrosive in nature.

Molybdenum is also being utilized prominently in **thin-film CIGS solar panels** which are expected to be substantially less expensive than traditional solar cells due to their much lower material and potentially lower fabrication costs. Although CIGS solar panels are made of copper, indium, gallium and selenium (hence the acronym 'CIGS') a thin layer of molybdenum is used as the effective electrode base upon which the aforementioned elements are deposited.



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World's Giants Jockey for Position

Driven by strong Chinese demand and some recovery in OECD markets, global mining and exploration giant **Rio Tinto reported a 39% jump in its Q1 iron ore production figures.** Rio Tinto followed the announcement with a 1.7% raise, from 230 million tonnes to 234 million tonnes, in its 2010 iron ore production target. Chief Executive Tom Albanese of Rio Tinto said that he was hopeful of his company's growth on the wave of economic recovery reported in Asia.

Mining leader, **BHP Billiton Limited, similarly announced an 11% jump in its Q3 iron ore production.** Although Chinese demand is credited with the upward trend, the company has pointed out that expansion

projects and wet weather in Australia restricted its output and limited its ability to benefit from **China's reported 22% year-on-year growth in steel production.** BHP Billiton has also indicated a higher production target for the next few quarters as demand from the infrastructure and automobile sectors shoot northwards.

Glyn Lawcock, an analyst at financial company UBS AG said, "Global steel production rates suggest continued higher demand for iron ore and coking coal". The forecast bodes well for the manganese market as well. A ready example of that is BHP Billiton's production of manganese ore, which shot up by 133% year-on-year during the same quarter because of high steel demand. The company's quarterly manganese alloy production rose by 64% year-on-year as well. BHP Billiton's manganese sector is reportedly running at full capacity because of the strong steel demand.

China, meanwhile, has announced a Q1 gross domestic

product (GDP) of \$1.19 trillion, indicating an undeniable recovery of the world's third largest economy. The 11.9% growth is several points higher than the 5.7% reported for Q1 last year and the 10.7% reported in Q4 of 2009. However, Li Xiaochao of the National Bureau of Statistics (NBS) has pointed out that the 2009 comparison base was rather low and the government's stimulus package played a large role in the high GDP growth. Nevertheless, the growth was better than expected and it was driven by a surging domestic demand. Asian stock markets rose in the immediate wake of the announcement although the Shanghai composite fell because of falling property stocks.



Source: 2009 U.S. Census Bureau

In early April, China announced countervailing duties on grain-oriented electrical steel from the US and anti-dumping duties against steel from the

US and Russia in what can only be termed as apparent retaliation to Washington's decision to impose tariffs on Chinese steel pipes used in the oil industry. Grain-oriented electrical or silicon steel is used to build the cores of electric motors, generators and high-efficiency transformers. China's Ministry of Commerce announced that importers would now have to pay an anti-dumping tax of up to 24% for Russian steel and up to 64.8% for products from the US. Investigations have revealed that US companies were granted government subsidies on the steel, and China has subsequently announced a countervailing tax of up to 44.6%. The decision came into effect from April 18, 2010. "This is China's first anti-dumping and anti-subsidy investigation," said ministry officials. "China is sticking to the principle of being fair and transparent in the investigation procedure, which was properly carried out according to the law."

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The Critical Crystal Ball

On-going Influences on Prices for Molybdenum, Manganese & Magnesium

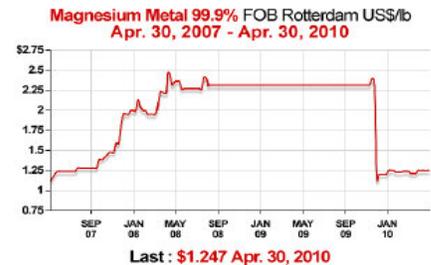
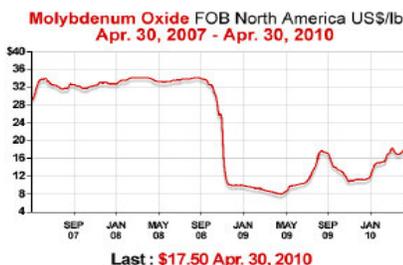
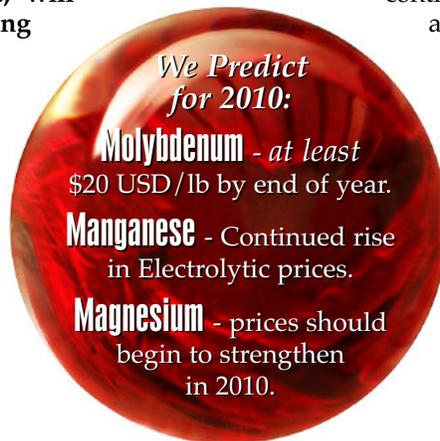
The Economics Committee of the World Steel Association met in Beijing last month and released a short-range outlook for 2010 and 2011. Daniel Novegil, Chairman of the Economics Committee said, "The world steel industry now seems firmly set on a path to recovery. The emerging economies, who in total maintained positive growth through the crisis, will continue to show strong growth, driving world steel demand in the future, however the current recovery in the major developed economies is slower and the projected steel demand for them in 2011 is well below the 2007 level."

China's apparent use of steel in 2010 could climb higher than 579 million metric tonnes (mmt) although 2011 could see a slower growth and use is likely to hover around 595 mmt. China is expected to account for 45.5% of the world's apparent steel use in 2011. India's steel demand is expected to increase by 13.9% and 13.7% in 2010 and 2011, respectively, given that the country's steel demand showed steady growth during the economic downturn. The CIS region, which saw steel demand fall by 28.2% in 2009, is expected to see an upward trend with demand growing by 11% in

2011 and 8% in 2011. The BRIC nations as a whole are expected to see a rise of 8% during 2010 in the use of steel and 4.1% in 2011.

With iron ore pricing arrangements between ore miners and steel makers set to change from annual contracts to quarterly contracts, steel prices are poised to rise. March saw the average steel price increase by 3.3% and by 24% over the lowest price reported in May 2009. Steel prices are at the highest now since August 2008 when Lehmans collapsed. BHP Billiton, Rio Tinto and Vale, the three global giants of iron ore mining, are expected to benefit tremendously from the new pricing policy. Profits of the three companies are likely to be boosted by a minimum of \$5 billion this year.

The rising demand for steel is creating a pressure on the supply chains as well. Chinese firms are reportedly rushing to fund and buy out small molybdenum producers worldwide in an effort to lower their steel production costs. With an inventory of over 45,000 mt, China currently accounts for 22% of the global molybdenum stock.



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