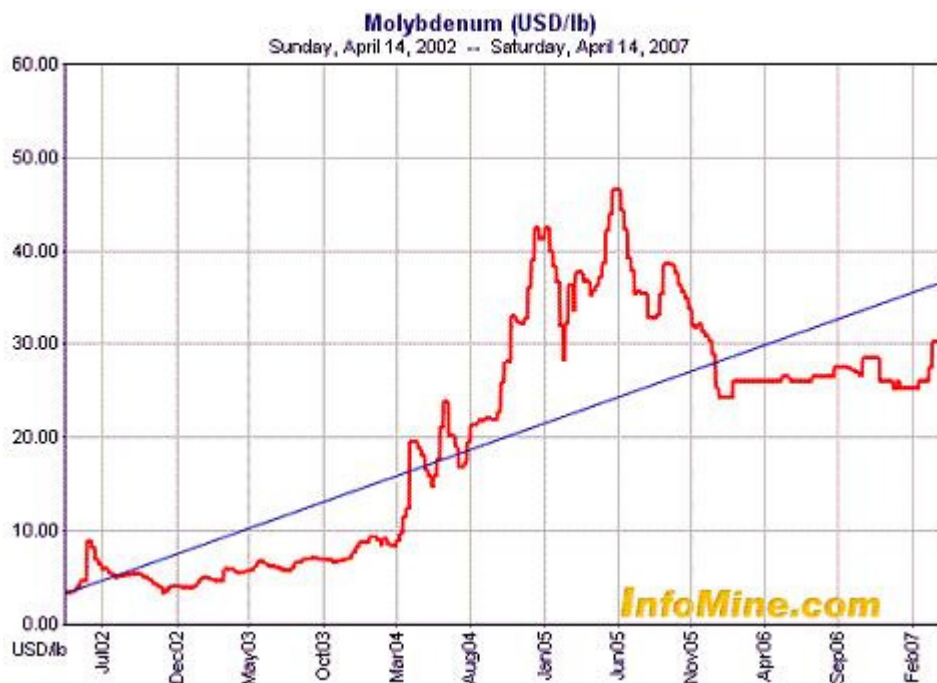


Good Golly, It's Moly

By Greg Peel

Wedged below chromium and above tungsten in the periodic table, molybdenum has at least one claim to fame in that it is arguably the hardest element name to pronounce. There is a certain irony, as it is for its hardness that molybdenum is also revered. But to save embarrassment, most in the molybdenum market refer to it as "moly".

Like most metals, moly's price has shot up over the past few years along with the great Chinese demand surge. However, moly made its big move from mid-2004 to mid-2005 where it peaked at over US\$40/lb. It has since corrected, and has settled in the US\$25-30/lb range recently.



The surge in the moly price largely coincided with movements in steel prices during the period. It was at the time of the amazing expansion of the Chinese steel industry which also saw the price of iron ore make a significant step-jump. Around the globe moly is produced mainly as a by-product of copper mining, although the Chinese have previously mined for moly specifically. At the time of increased demand, environmentally destructive moly mines were being forced to close in China, which only served to exacerbate the price movement.

The US Geographical Survey describes moly as such:

"Molybdenum (Mo) is a refractory metallic element used principally as an alloying agent in steel, cast iron, and superalloys to enhance hardenability, strength, toughness, and wear and corrosion resistance. To achieve desired metallurgical properties, molybdenum,

primarily in the form of molybdenic oxide or ferromolybdenum, is frequently used in combination with or added to chromium, columbium (niobium), manganese, nickel, tungsten, or other alloy metals. The versatility of molybdenum in enhancing a variety of alloy properties has ensured it a significant role in contemporary industrial technology, which increasingly requires materials that are serviceable under high stress, expanded temperature ranges, and highly corrosive environments. Moreover, molybdenum finds significant usage as a refractory metal in numerous chemical applications, including catalysts, lubricants, and pigments. Few of molybdenum's uses have acceptable substitutions."

It was due to moly's versatility that moly-watcher Ken Reser described it in 2005 as "the metal of the twenty-first century" and "the big secret".

But those excited about moly two years ago have since been disappointed. The price has recently stabilised at below-peak levels. The question now is will it drift further back to more historical levels, or will it form a base here? Analysts at GSJB Were last month suggested a 2007 average price of US\$22/lb, down from US\$25/lb last year. Citigroup is forecasting US\$20/lb this year and US\$10/lb in 2008. There might be some upside, notes Citi.

Let's face it: how many metals have actually returned to historical averages? And how often have resource analysts been content to simply shuffle up their price forecasts when spot prices rise too far above? Citigroup's Alan heap is still forecasting a 2007 average uranium price of US\$73/lb and 2008 of US\$50/lb, while at the same time suggesting demand will continue to outstrip supply over the period. The uranium price is now US\$113/lb. Go figure.

There is no futures contract traded for molybdenum, but moly trading is more active than uranium trading. Last month, however, saw the introduction of the first moly exchange traded fund by Canada's Sprott Asset Management. Even this contract is far from "pure", investing 25% in metal and 75% in the shares of moly producers. But once investors can move into a commodity market, we know what tends to happen.

In the 1990's, moly was in oversupply. Chile is a major producer and back then the country was producing anything it could to generate hard currency to prop up its economy. This led to a period of minimal prices and overloaded warehouses. Moly production surged again around 2004 in response to the sudden jump in demand, which again goes some way to explaining the subsequent price decline.

However, according to metals expert Denis Battram, global moly production from traditional producers is now in decline. Chile's production exceeded 100mlbs in 2005 but has slipped to about 80mlbs today. The trend is still down. Canada's production has also eroded significantly, with several mines having closed. Chinese production has fallen potentially as much as 25% between 2002 and 2006 (Chinese numbers are always hard to confirm). China is currently in the process of introducing tariffs and other restrictions to moly exports. It wants to keep all the moly it can.

Denis Battram last month released a paper entitled "Structural Changes in Molybdenum Demand", which makes for interesting reading.

The main demand driver for moly is the steel market – particularly stainless and carbon steels. When the price of moly was languishing, development of moly-steel alloys was still largely in its infancy. Today there is a concerted push to produce new forms of duplex stainless steels which use up to 40% more moly than previously. Moly is being substituted for nickel, offering more beneficial properties. The price of nickel has continued to surge.

Commercial production of duplex nickel/moly steels is still evolving. China's leading steelmaker Baosteel produced its first hot rolled duplex stainless steel strip only this year. Currently moly-steels represent only 7-10% of the global stainless market. The US has been slow to adopt to moly, but not so Europe. Moly-steels are being used to build wheat silos and bulk-liquid storage tanks in Spain, and biodiesel production tanks in Holland, for example.

There are many potential applications for duplex stainless steels, but what is more exciting is the rising demand for so called "super" duplex stainless steels – those alloys significantly richer in moly increasingly being specified for use in highly corrosive conditions. Just one of those applications is for desalination plants.

Large desal plants are currently under construction in Libya, Saudi Arabia and Dubai. The South Australian government is presently working with BHP Billiton (BHP) to build a desal plant at Spencer Gulf to service both the massive Olympic Dam uranium mine and townships in the state's dry north. Australia is currently toying with 17 coastal locations suitable for desal plants. Spain plans to build 30 over the next few years. Spanish stainless steel producer Tubinox has announced its intention to double capacity between now and 2010 specifically to take advantage of the growing desal industry.

Increasing numbers of mining operations are under pressure to provide for their own extensive water usage. Desalination is becoming more and more popular as the world's dry areas become even drier.

Forty times bigger than the global stainless steel industry is the global carbon steel industry. By introducing moly into alloys the carbon steel industry is beginning to regain the ground lost to aluminium and plastics. The upside for moly use in this industry is, says Battram, "truly extraordinary".

Use of moly-steels is revolutionising the steel pipeline industry. Such advanced high-strength steels require less steel overall and greatly lowers construction costs. The vast majority of the world's pipe mills are yet to upgrade to new high-level moly alloys. Japan's Nippon Steel has announced the creation of a separate division simply for the production of moly-steel pipes and compressed gas cylinders.

Car makers in both Europe and North America are increasing their usage of high-strength steels as they struggle to meet safety improvement requirements while not adding weight. Safety aside, weight reduction is clearly a benefit in attempts to reduce carbon emissions. Asia is also following the trend, including China's fledgling auto market. Chinese car production increased by 27% in 2006.

New legislation in the shipping industry requires large cargo ships to have double-hulls by 2010, and again, weight considerations have seen ship builders turn to moly.

Another extensive usage for moly alloys is in the construction of nuclear power plants. Even before the rapid expansion in nuclear plant construction globally is taken into account, new generation reactors have increased the need for moly components, operating as they do under hotter and more corrosive conditions.

The majority of any power plant's component weight is common for nuclear, coal-based or oil-based generation. Hence it is irrelevant which way the world turns for its power generation – moly will still be in demand.

That's a wrap of just some of the applications for moly in steel, now let's turn to catalysts. Says Denis Battram:

"ULSD [or ultra-low sulphide diesel] is the single largest environmental mandate since the removal of lead from gasoline 25 years ago, and the full impact on molybdenum demand is yet to be felt".

Battram notes "extraordinary" growth in catalyst demand for the production of ULSD. To achieve the required sulphur reduction refineries must double their use of catalysts. About 95% of refiners use nickel-moly or cobalt-moly compounds. Since late last year, most of the diesel sold in North America has been ULSD, and this year sees the first production of diesel engines designed specifically to run on ULSD. Diesel demand growth over the last three years, at 4%, has doubled that of gasoline. US sales of diesel cars and trucks have increased by 80% in the last six years, and are expected to double again over the next decade.

Another application for moly catalysts is in the growing industry of gas-to-liquid fuel production. Ken Reser notes that as the popularity of GTL grows, required inventory for a single plant runs to thousands of tonnes of catalyst. Indeed, the demand for catalysts will also be driven by other alternative fuel sources, such as coal liquefaction (just becoming talked about in Australia), tar sands, and even in the cracking of today's remaining heavier, sour crude oil.

And of course there's the military. Battram notes China's recent tariff increase on moly exports happened to coincide with President Hu Jintao's announcement of a new defense spending plan that will include the building of a "strong and modern navy". As China rearms, Japan becomes nervous and it is looking to replace its entire airforce. No need to point out that moly has become popular in armour plate production.

And those famous "bunker buster" bombs that kicked off the latest Iraq war are also made with a moly-steel casing.

Experts suggest a further 100 million pounds of moly will be needed over the next four years to meet demand, which is expected to grow by 4% per annum from current levels of 410 million pounds. It is unclear where the new supply might come from. There are few new mines scheduled to come on stream with the exception of one in Peru, which should be producing 9 million pounds per annum by 2009, and a ramp-up by existing producer Phelps Dodge, which won't impact until 2010.

As far as the outlook for the moly price for here on in is concerned, one can be forgiven for saying "good golly".

The largest producer of moly in Australia is Rio Tinto (RIO). While analysts are beginning to look at the impact of moly on Rio's bottom line the truth remains that as the world's second largest diversified mining company, any effect from a rising moly price is lost within Rio's expanse of other projects. However, there are some small Australian miners looking to move on the moly front.

Moly Mines' (MOL) Spinifex Ridge project, located in the Pilbara Region of Western Australia, hosts a and moly and copper resource that can sustain a 15 million tonne mining operation for over 20 years, according to the company.

D'Aguiar Gold (DGR) has this month doubled resource estimates at its Anduramba moly project and is looking to prove up the expected 2 million tonne per annum operation.

Listed March this year, Capital Mining (CMY) boasts "an immense porphyry-style mineral system where the target is a gold-copper-molybdenum deposit".

Other recently listed moly explorers include Vital Metals (VML), Catalyst Metals (CYL), Beacon Minerals (BCN), Artemis Resources (ARV) and Intermin Resources (IRC).

Be warned that some of these stocks have already had a good run. There are, however, opportunities among the newer explorers. The decision is to exactly what stage of development these stocks are at, and what one considers to be the upside for moly. Will it mimic uranium? Perhaps not, but it would seem that the moly market may well have reached a significant stage in its recognition.

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