

GERMANIUM SUPPLY & MARKET OUTLOOK

APRIL 2010



The germanium market has not garnered much attention over the past year due to persistently low demand and little price movement. In fact, since the global financial crisis began in mid-2008, germanium metal prices have remained near their lowest levels in 10 years. SMI Ltd., however, expects this situation to change before the end of the year, as a number of factors will impact the industry, particularly in the second half of 2010.

The global economic recovery, although slow to build momentum, took shape in the second half of last year and resulted in rising commodity prices. This will help strengthen germanium demand and sales in 2010. The financial crisis caught most companies by surprise and left many germanium end-users holding large inventories. These companies have been using up their germanium inventories for much of the last two years, and those that have already depleted their inventory have been content buying material at the low spot market prices available. Throughout 2009 and the first quarter of 2010, germanium prices showed little prospect of increasing and continuing uncertainty regarding the progress of global recovery provided purchasers no incentive to tie-up capital in large purchase contracts. However, strengthening global demand, in combination with decreasing inventories, should encourage larger purchase orders by the second half of this year.

A second development that will impact the industry this year is the expected completion of a new germanium production facility in Inner Mongolia and the consequent supply increase. The Xilingol Mengdong Germanium facility is scheduled to begin production in late 2010 and provide the market with products equivalent to an additional 60 tonnes of germanium metal annually. This increase is expected to put a drag on already depressed prices. End-users hope that this added supply will bring prices down even further. However, we are highly skeptical that germanium prices will drop below recent lows for two reasons:

(1) Chinese germanium producers, faced with static demand and growing inventory over the past two years, have persistently held prices above US\$

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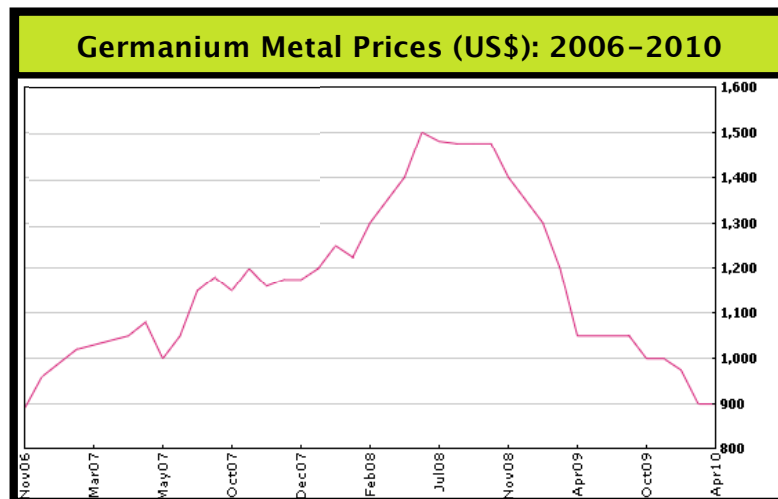
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850–900/kg (FOB), indicating that mark to be their base production cost. Relying on income from other sources – and quite likely government support – producers do have the ability to increase inventory and wait until demand recovers enough to support this price. Moreover, the Xilingol project began development in 2008 while germanium prices were over US\$ 1200/kg, making it safe to assume its profitability is based on revenues of at least \$850/kg. As such, they will be just as resistant as other Chinese producers to lowering prices.

(2) Should excess supply put significant downward pressure on germanium prices, we believe that the Chinese government will confirm rumours and support the industry by purchasing germanium for its strategic reserves. This will ensure that Chinese producers remain in a strong position when demand recovers to where the market can support the new production levels at current prices and would very much be in accord with the country's policies aimed at enhancing control of minor metal production.



Adapted from: Minormetals.com

Another factor that is likely to impact the germanium industry this year is the listing of the two largest Chinese producers on the Shenzhen Stock Exchange (SZSE). Yunnan Lincang Xinyuan Germanium and Nanjing Germanium have both had their IPO listings accepted by the SZSE. These listings should provide both companies with cash to expand activities,

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invest in developing value-added products or consider purchasing some of the smaller Chinese producers, which have been blamed for driving down domestic prices. Considering Chinese national natural resource export and industrial development policies, we believe that cash raised from the IPOs will be mainly invested in two areas: First, in developing more valued-added products, particularly in the photovoltaic cell and semiconductor fields, where China currently lags behind developed countries, and second, in purchasing smaller producers and germanium recyclers, which will lead to greater consolidation in the industry. Although the impact of these developments will not be immediate, and likely not felt by end-users within 2010, the effect on the industry over the next two to three years could be significant. As a supplier of about 70% of the world's germanium, greater consolidation in China will put more price-making powers in the hands of Chinese suppliers. When considered with the possibility of greater export controls the obvious long-term effect of these developments is higher FOB prices for Chinese germanium.

The final issue that we believe will leave an impact on the industry this year is the increasing likelihood that the Chinese government will allow greater exchange rate flexibility. This, no doubt, will be a recurring theme in many of our minor metal reports this year. Whether or not the government allows more flexibility this year, the result may be very similar. Chinese domestic inflation hit two years high this spring, nearing 3%, and is projected to surpass 5% by the end of the year according to analysts with Credit Suisse. Without greater exchange rate flexibility, there will be little relief from this inflation and domestic inflation will continue to put upward pressure on production costs. By driving up production costs, inflation may actually be more consequential than a controlled exchange rate increase or small revaluation, which would result in an immediate increase in FOB prices for international purchasers. Regardless of Chinese price increases, other international producers do not currently have greater production capacity to meet global demand. Therefore, should Chinese prices increase, we expect that producers outside of China will raise prices accordingly while welcoming the slightly larger profits.

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The demand fundamentals for germanium have not changed despite recent economic conditions. Lagging sales do not aptly reflect the increasing demand in key germanium applications, including the infrared optic, optical fiber, PET, semiconductor and photovoltaic cell industries. In sum, the timing of the four factors discussed above will shape how the germanium market develops this year. We are confident that the global economic recovery and growing demand will start to decrease germanium inventories that producers have built up over the past two years by the second half of 2010. Prospects of greater industry consolidation, along with the potential for increased export controls and government stockpiling will; moreover, support resistance to price decreases despite growing germanium production. The largest direct impact on pricing this year, however, will likely come from Chinese inflation driving up production costs. As such, SMI Ltd. is advising that end-users consider investing in more inventory of germanium materials in the first half of this year while prices remain low and material is widely available.

Given the market supply dynamics for germanium, SMI Ltd.'s minor metals price index is projecting germanium prices to **increase 15%** by the fourth quarter of 2010.

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