An Introduction to Niobium and Tantalum

Niobium and Tantalum Prices

Niobium and tantalum prices are not publicly quoted. Two Canadian-based exploration companies have been evaluating the economic potential of niobium and tantalum bearing deposits and, in their 2010 and 2011 evaluation reports, have used a range of commodity prices from about US$40 to US$56 per kilogram Nb_2O_5 and from about US$110 to US$256 per kilogram Ta_2O_5

Niobium Market

Niobium is also sometimes referred to as columbium and is used in a variety of forms. The most important in tonnage terms is standard grade ferro-niobium, which has applications in high-strength-low-alloy (HSLA) and stainless steels. This market accounts for about 90% of niobium usage. Ferro-niobium is an iron- niobium alloy containing 60 to 70% niobium which is a metallurgical reduction of mined concentrates, typically pyrochlore. The niobium market is mainly controlled by Brazil-based producers Companhia Brasileira de Metalurgia e Mineração, Mineração Catalão de Goiás, and from IAMGOLD's Niobec underground mine in Quebec.

Roskill Information Services Ltd. ("Roskill") have stated that growth in the global niobium market has been remarkable during the 2000s and was particularly strong from the middle of the decade. In addition historically, niobium prices had been very stable, but changed in 2007, when prices for ferro-niobium began to climb very sharply. Average import prices in Japan increased from about US$9,000/t gross weight in 2006 to over US$22,000/t in 2008, largely tied to the strength of the steel industry. Prices softened during the financial crisis but have remained strong more recently.

Tantalum Market

Tantalum has unique attributes that make it suitable for several specific purposes. It has an exceedingly high melting point, is highly corrosion-resistant, alloys well with other metals, is superconductive for electricity and, most importantly, has an excellent capacity to store and release an electrical charge.

About half of the tantalum consumed each year is used in the electronics industry, mainly as powder and wire for capacitors, owing to tantalum's particular ability to store and release electrical energy. This allows components to be exceptionally small and they are therefore favoured in space-sensitive high-end applications in telecommunications, data storage and implantable medical devices. Tantalum is also used for electronic sound filters and as a barrier against copper diffusion in semi-conductors. Tantalum carbide's hardness makes it ideal for cutting tools.

According to Roskill, there are mounting fears in the tantalum market that serious shortages are looming. If there is even a modest recovery in demand for tantalum, the market faces a difficult period. A key issue is the continuing supply of low-cost columbite-tantalite (Coltan), mined in Central Africa, mostly illegally, and sold to fund rebel militias. As a result of this cheap supply (and in advance of anticipated conflict minerals legislation), close to 40% of global primary tantalum capacity was taken out of the market in 2008.

The "Conflict Minerals Law", promulgated in the U.S. in 2010, aims at restricting the trade of conflict minerals which includes Coltan, and thus many technology companies, like Apple Inc. and Motorola Solutions Inc. are taking initiatives to comply with the law.

Restrictions regarding conflict minerals are likely to improve tantalum trading conditions and keep prices at sustainable levels for conflict-free tantalum miners. As a result of these evolutionary changes in the market, production rebounded in 2010 with the re-opening of capacity that was shut down in 2009.

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