

[2009-02-06] Rhenium 2009 and beyond

It could be said that the only type of melting that has been going on recently has been that of the melt-down of financial institutions.

Dissolving with them, in the molten liquor of the global economic downturn, have been commodity prices with concomitant effects on the share valuations of the companies that produce them. FTSE 100 Kazakhmys which came to the market in October 2006 is a good example, falling from just under £20 per share to around £2, as copper more than halved from \$9000 per mt in mid 2008 to current levels near \$3000 per mt.

However, less watched, but of no less significance, is the way in which by-product metals react when the base metal parent loses its lustre. We may take Rhenium & Kazakhmys as a good example. With Kazakh copper output falling from close to 400,000 metric tons at its peak to a projected 300,000 tpy for 2009, it begs the question – ‘What will be the effect on Rhenium?’

It is not a direct correlation, of course, as much depends upon the variable Rhenium content in the ores. But the fact is that, broadly, you are not going to see an increase in Rhenium production so long as its only means of production is as a by-product of copper. This rather leads to the conclusion that, at no more than 45 mt per year of total world primary supply, Rhenium, with its un-substitutable uses mainly in the aerospace and oil purification industries, should be classed as a prime defensive asset.

Let's not forget, in all the gloom, that plane orders reached an all time high of 2754 planes in 2007 and, at present, Airbus and Boeing have a delivery backlog of 7400 planes valued at \$900 billion (catalogue price); this is more than the US Bank bail-out plan. Using a rough calculation of average 20-25 kg Rhenium per engine – this is around 300-370 mt of Rhenium. Putting this in other words – it will take aero-makers 6 to 8 years, at full working capacity, to fulfil the backlog even if no new orders are placed - which is of course impossible. On the 2nd February 2009 Ryanair announced its intention to buy up to 400 planes – that's 20 mt of Rhenium whether it comes as welcome replacement for cancellations or is added to the final total. The point is, that while overall plane orders are certainly slowing down, deliveries are not, and that is what will allow engine makers to ride out the recession.

As for the Oil industry, even at relatively low oil prices, it is performing well. There have been cuts to new investment, but core activities – oil exploration and purification - are still seeing money flowing. Oil companies require rhenium-bearing catalysts to refine their crude in order to make it useable. The industry uses much less new rhenium than plane-makers due to high levels of recycling, but the way in which it buys determines the spot price. While alloy makers and engine makers generally make long term contracts, catalyst makers have little option but to buy hand to mouth when a catalyst change is imminent. And while the cost of Rhenium is not insignificant, it is not high enough for the catalyst maker to procrastinate when compared to the potential losses by downtime at a refinery.

The supply side of the Rhenium market, on the other hand, could now be seriously affected as parental copper companies are battered by plunging share prices and production cutbacks. It still remains the case that for all the companies that generate Rhenium, it is still just a by-product, to the extent that some of the managers within companies that own Rhenium within their ores are not even aware that it is there. Try ringing Freeport McMoran and ask them about their Rhenium production, and you will see what I mean.

The collapse of Molybdenum prices, with Ferro Molybdenum down from \$80 per kg Mo last year to

today's \$24 per kg Mo, won't help Rhenium production either. Chile's largest Molybdenum producer, Molymet, will most likely report Rhenium production in 2008 at 27mt (the same as 2007) but it is likely to be the peak. Molymet already announced on 17th Dec 2008 the halt of a fund-raising exercise designed to finance their expansion at Mejillones. Meanwhile, diving copper prices threaten expansion plans at high cost KGHM ECOREN whose plans to double output from 3 to 6 mtpy in 2009 may have to be put on hold and Freeport McMoran's cuts at Climax have been swingeing including cuts at Sierrita the mine in Arizona responsible for the majority of the Rhenium. The message is 'don't look out for increases in primary Rhenium production any time soon.'

The one area from which better Rhenium supply might come is recovery from scrap Nickel alloy turbine blades and castings scrap. It is a prospective area that might ease the demand-supply imbalance fractionally. However the process is quite new – the yields are around 70% and the cost is around \$3000 per kg Re recovered – not to mention the 6 – 9 month time-frame for the whole process. It is also important to note that there is only a limited amount of Ni alloy on the market – the material was produced in industrial amounts only from 1980s and for the first 20 years the Rhenium disappeared along with the alloy in which it was contained into stainless steel. [If you want that Rhenium back you will have to melt a lot of knives and forks.] The rest of it is still in the plane engines and likely to be there for a few years to come as one of the key attributes Rhenium brings to alloys is longevity.

Overall, those who are involved with this rare by-product, still more expensive than Palladium, need to be quite optimistic, especially if we look past the recession. It is clear that the huge production cuts will cause long term supply problems. The rhenium market is looking strong in comparison to other markets, the imbalance in rhenium supply-demand exists, production is being cut, and the recovery is expensive and time-consuming. Of course in the short-term price might be volatile due to psychological effects, and different companies trying to liquidate their stocks for cashflow reasons.

We predict that while the previous panic in Rhenium has clearly gone out of the market spot orders will keep the market bubbling. Luckily the Re market remains free from speculators and over-leveraging that precipitated the falls in prices of other commodities.

Current prices for catalyst grade APR are circling the \$8000 per kg Re level and may well fall lower. But all the bank collapses on Wall Street and in the City of London still won't change the fact that it is the 77th least abundant element in the periodic table. It is a fact that ensures Rhenium's stability for a long time to come and should be regarded by long term users as their last chance to build the stock that at some moments over the last 12 months seemed impossible. Just take a look at the figures below. This is total world primary Rhenium production and with aerospace alone needing 50-60 tpy it cannot be filled with primary alone. This is a metal where recycling is not a luxury but a necessity and thus the steps being taken across the world to recapture Rhenium units will be investment well placed.

[Click here to see: Rhenium production breakdown.](#)

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