

RESEARCH THE RECOVERY OF RARE EARTH RHENIUM FROM MOLYBDENUM CONCENTRATE

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Abstract: There are two main molybdenum-porphyr copper deposits which contain rhenium in Mongolia.

For intensive process a molybdenum concentrate, "Erdenet" factory incorporated with "Metal Tech" company of Israel established factory of manufacturing molybdenum concentrate which dependent of "Shim Technology" LLC. Intensive process of mining metal, ore has economic high benefits and has importance to create new work places, increase a tax into state budget as long as enter new technique and technology.

Key words: Molybdenum concentrate, ammonium perrhenate, rhenium

I. Introduction

LARGEST COPPER-MOLYBDENUM DEPOSITS IN MONGOLIA.

- Erdenet
-9.2 million tons copper
-270 thousand tons molybdenum
- Tsagaan Suvarga
-1.3 million tons copper
-44 thousand tons molybdenum

Source: Mongolian ministry of minerals and energetic.

Rhenium

- In 1925, Rhenium was discovered by Walter Noddak in Germany.
- Rhenium is a silvery-white metal and one of the rarest elements in Earth's crust.
- Rhenium is probably not found free in nature, but occurs in amounts up to 0.2% in the mineral molybdenum ore and copper ore.

✓ Applications of rhenium:

39% Gas turbine production
36% Jet engine production
12% accelerator in oil-fuel production
5%- X-ray technique

4%-Space technique

4% Metallurgy

✓ Production of rhenium

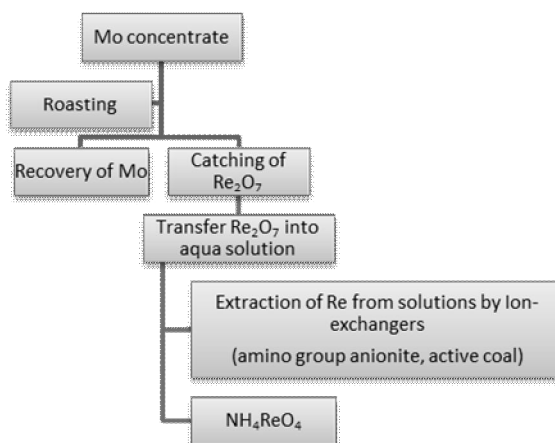
Molybdenum concentrate contains approximately 0.02-0.17% rhenium in porphyry copper fields. Rhenium is extracted from concentrate by ammonium perrhenate (69.2% Re) and powder metal.

Total world production is between 40 and 50 tons per year and the main producers are in Chile, the United States, and Kazakhstan.

Recovery of Rhenium:

1. Low dissolve combination by (Potassium perrhenate ($KReO_4$), Sulphide rhenium Re_2S_7)
2. Recovery of NH_4ReO_4 by sorption of ion-exchange resins.
3. Method of extraction

RECOVERY OF NH_4ReO_4 BY SORPTION OF ION-EXCHANGE RESINS.



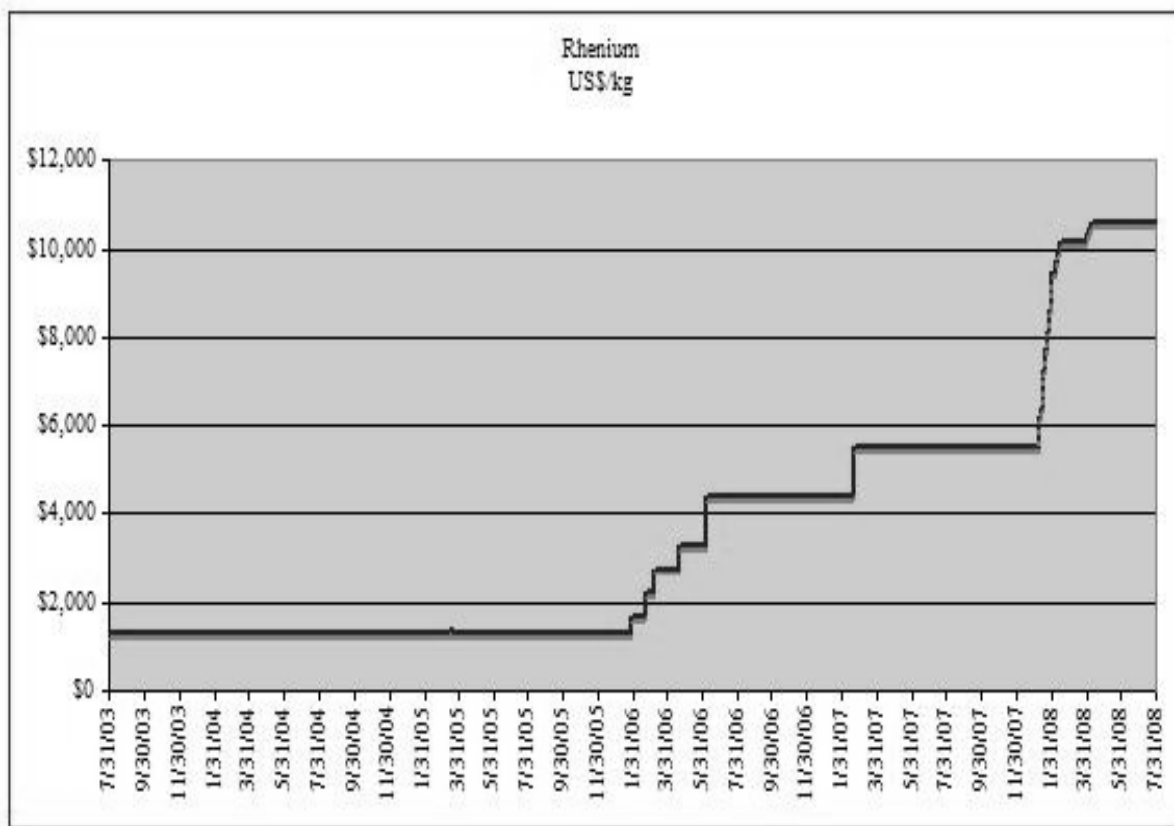
• Advantages:

- low cost production
- closed process, re-using of solutions
- easy controllable

• Disadvantages:

- low yields of 20 Re-compound
- pure metal Re should be produced
- emission of SO_2

Price of rhenium, \$/kg



PRICE OF AMMONIUM PERRHENATE NH_4ReO_4 (69.2% Re), \$/kg

- × 1997 years - 271
- × 1998 year - 370
- × 1999-2000 years- 800 - 900
- × 2001-2002 years - 1300
- × 2005-2008 years- 5000-8500
- × 2009 - 6500

velop the technology of producing Re and enter into production, we have real ability to produce 130 kg ammonium perrhenate which contains 90 kg rhenium per month.

CONCLUSION

Mongolia will have ability to become one of the biggest producer of rhenium.

If we have recovery 100% rhenium from ore, it will complete an ability to find high value.

ECONOMIC BENEFITS OF RECOVERY OF RHENIUM.

Currently producing ammonium perrhenate which contains 20 kg rhenium by sorption of ion-exchange resins per month in molybdenum factory, but it is just using 20% from total emanating Re during production.

Consequently, if intensify to research of de-

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