



HOME | BREAKING NEWS | WORLD NEWS | RESEARCH | MULTIMEDIA | MAGAZINE | SECTOR NEWS | ABOUT US

6th October 2009 | videoclips | audioclips | podcasts | image gallery

News This Week | Cartoon | Weekly Features | Features Library | Tenders | What's On | Incentives | Back Copies

Advertisers' Catalogue & Product Listing | Electra Mining | Mining Indaba | Company Announcements | Careers | iPhone | BookStore | Press Office

SEARCH



Advanced Search | Subscribe | Free Daily Email | Subscriber Login | RSS
GOLD 1015.65 \$/oz | PLATINUM 1295.50 \$/oz | R/\$ exchange 7.49 | R/€ exchange 10.97

HOME | MAGAZINE | NEWS THIS WEEK

SHARE



RARE EARTH METALS

Interest in rare earths stimulated by concerns over possible Chinese export curbs

0 COMMENTS | ADD A COMMENT

EMAIL | PRINT

By: **Keith Campbell**

TEXT SIZE

4th September 2009

The possibility that China could restrict the export of some rare earth metals, and completely ban the export of others, has caused a stir and, if Beijing should actually implement such a policy, would create opportunities for mining companies and projects around the world, including in South Africa.

Rare earths, as they are known for short, are little known (even in the broader mining industry) and unglamorous. They have strange, even outlandish, names, but they have become very important because of their use in modern high-technology devices, including superconductors, miniaturised magnets, lasers, optoelectronic systems, fuel cells, and components for hybrid cars, as well as in refining catalysts and older electronics applications, such as cathode ray tubes (used in TVs).

Although, as the US Geological Survey (USGS) points out, there are substitutes available for rare earths in many applications, these are generally less effective and, thus, decidedly second-best options. Moreover, in certain key applications in electronics and lasers, there are no substitutes. Not surprisingly, the global demand for rare earths is increasing.

There are 17 metals classified as rare earths, 15 of them being in the group scientifically designated as the lanthanoids (previously, lanthanides). The lanthanoids are (in order of increasing atomic number, which is the number of protons in the nucleus of the atom concerned), lanthanum (atomic number 57), cerium (58), praseodymium (59), neodymium (60), promethium (61), samarium (62), europium (63), gadolinium (64), terbium (65), dysprosium (66), holmium (67), erbium (68), thulium (69), ytterbium (70) and lutetium (71). Only promethium is radioactive.

The lanthanoids are chemically similar and their properties differ only slightly. In their elemental form, they are iron gray to silvery lustrous metals; they are usually soft, malleable, ductile and typically reactive – especially when finely divided or at high temperatures.

The other two rare earths are scandium (atomic number 21) and yttrium (39). They are grouped with the lanthanoids because they show similar chemical properties to, and are usually found in the same ore deposits as, lanthanoids.

Rare earths are more common in the planet's crust than their name would imply. The most abundant of them, cerium, ranks twenty-fifth out of the 78 common elements in the crust, with an occurrence of 60 parts per million (ppm). The least abundant of the group are thulium and lutetium, at around 0,5 ppm each. However, economically mineable concentrations are rare.

China currently produces more than 95% of the world's rare earths. The China Rare Earth

Picture by: Public domain
RARE EARTH OXIDES: clockwise from top centre: praseodymium, cerium, lanthanum, neodymium, samarium, and gadolinium

RELATED ARTICLES

ARTICLES | AUDIO | VIDEO

No related articles No related articles

LATEST ARTICLES

LATEST NEWS THIS WEEK | BREAKING NEWS

World short of copper, 10 Mt supply gap in 2020 – BHP...

Global economic storm drives Leviev onto the rocks
Mining fleet company playing key part in Pilanesberg...
Resource-intensive nature of Chinese growth to drive raw...

Ferrochrome producer completes pioneering conversion of a...

Zim Chamber of Mines forecasts long journey to...
New fund to target coal, renewable-energy projects

POPULAR NEWS THIS WEEK

24 HOURS | 1 WEEK | 1 MONTH

World short of copper, 10 Mt supply gap in 2020 – BHP...

Global economic storm drives Leviev onto the rocks
Mining fleet company playing key part in Pilanesberg...
Resource-intensive nature of Chinese growth to drive raw...

Zim Chamber of Mines forecasts long journey to...
New fund to target coal, renewable-energy projects
SA-developed technology being used to recover gold at...

MTE 2009 EXPO CALENDAR
TRAVELLING MINING & TECHNICAL EXHIBITIONS
Tel: 011 579 4940
Fax: 0861 11 2478
miningexhibitions@ptmg.co.za
CHINGOLA EXPO INTERNATIONAL EXPO
Konkola Copper Mines
COPPER
8 SEPTEMBER 2009 12H00 - 18H00

world coal conference
25 - 27 October 2009
Queen Elizabeth II Centre Westminster, London
coaltrans 2009 london
CLICK HERE
to visit www.coaltrans.com/london

CAPE TOWN, SOUTH AFRICA
MINING INDABA
1-4 FEB. 2010

Selling Gold Is Easy
 Buying it for \$329 an ounce is the tricky part. Free Report.
www.StreetAuthority.com

yttrium oxide
 The global supplier of rare earth products
www.gzgoring.com

Junior Mining Companies
 Canadian Jr. Mining Companies Research Data. Subscribe for Free!
StockResearchPortal.com/Try_Now

website lists 56 companies in that country which produce these metals. China's draft 'Rare Earths Industry Development Plan 2009–2015' proposes that the country ban the export of dysprosium, terbium, thulium, lutetium and yttrium, and restrict the exports of all the other rare earth metals to a level below 35 000 t/y. The aim is to protect and promote the development of the country's high-technology industries, and not to drive up prices or hold the world to ransom.

According to the USGS, global rare earth production was 124 000 t in 2008, of which 120 000 t came from China. The second-largest source is India, producing 2 700 t in 2008, followed by Brazil (650 t), and Malaysia (380 t). The USGS reports that rare earth production figures for the Commonwealth of Independent States (CIS – the former USSR) are not available. A Chinese company, Metall Rare Earths, reports that the CIS countries produce only very small quantities of these metals.

There is, however, a longer list of countries with significant rare earth reserves. According to the USGS, Chinese reserves of rare earths amount to 27 000 000 t, followed by the CIS with 19 000 000 t, then the US (which currently does not mine these metals) with 13 000 000 t, Australia (which also has no operational mines at present) with 5 200 000 t, India with 1 100 000 t, Brazil with 48 000 t, and Malaysia with 30 000 t. Another 22 000 000 t of reserves is spread among a number of other countries, including Malawi, Sri Lanka, Thailand – and South Africa. Indeed, during the 1950s, South Africa was the world number one producer of rare earths.

As it happens, a number of rare earth mining projects are already under development outside China, and some of the companies concerned are now highlighting the draft Chinese plan for these metals. For example, Toronto-listed Ucore Uranium is developing the Bokan-Dotson Ridge rare earths project in south-east Alaska, while Australian junior Arafura Resources is developing the Nolans rare earths project in Australia's Northern Territories.

Toronto-listed Great Western Minerals Group (GWMG) is developing four rare earths projects – one in South Africa. This is the Steenkampskraal project, aimed at refurbishing and recommissioning the old Steenkampskraal mine, some 70 km north of Vanrhynsdorp, in the Western Cape.

This project is a joint venture with Stellenbosch-based Rare Earth Extraction (Rareco), in terms of an agreement signed in January. Rareco acquired the decommissioned mine in 1989, but Chinese production rendered its reopening unviable until recently. GWMG will have the right to 100% of the rare earths mined at Steenkampskraal.

The mine is believed to have almost 30 000 t of recoverable rare earth metals, and can also produce thorium – indeed, it was originally operated by Anglo American from 1952 to 1963 as a thorium mine. The property is permitted for mining until 2012 but the mining rights have to be converted from old order to new order and the application for this was submitted in April. The feasibility study is currently being updated.

Edited by: [Martin Zhuwakinyu](#)

Rare Earth Price Risk

Critical Metals Supply Chain Summit
 October 20-22, '09 | Washington, DC

Lithium Mining Stock

This Little-Known Company is Set To Skyrocket. New Investor Report.

Junior Mining Companies

Canadian Jr. Mining Companies Research Data. Subscribe for Free!
StockResearchPortal.com

Avoid collisions in mines

Detect surrounding vehicles and protect your employees
www.safe-mine.com

Portugal Gold & Tungsten

Gold, Tungsten & Tin - Exploration and Resources in northern Portugal
www.coltresources.com

Data Mining Demo

Watch the Cognos Data Mining Software Demo Right Now.
Cognos.com/data_mir

Contact Reinette Classen on +27 11 622 3744 or [CLICK HERE](#) for more info



Creamer Media now offers
Online Factory Tours
 Present your manufacturing facility to the over 300 000 unique visitors of Engineering News Online & MiningWeekly.com



COSIRA GROUP
 The Construction Solutions Group
www.cosira.com



thinking explosives?

TOPICS IN THIS ARTICLE

City	Company	Country	Facility
Beijing	Arafura Resources	Australia	Steenkampskraal Mine
Stellenbosch	Great Western Minerals Group	Brazil	
Toronto	Rare Earth Extraction	China	
	Rareco	India	
		Malawi	
		Malaysia	
		South Africa	
		Sri Lanka	
		Thailand	
		United States	
Holiday	Industry Term	Product	Province Or State

Commonwealth Day	Broader Mining Industry Certain Key Applications Electronics Electronics Applications Optroelectronic Systems Similar Chemical Properties	Nolans	Alaska
Technology			
Fuel Cells Lasers			

PRINT EMAIL

SHARE

HIDE COMMENTS

THIS ARTICLE CONTAINS NO COMMENTS

CANCEL COMMENT

All comments must be approved by our editors, click here to read the [EDITORIAL GUIDELINES FOR COMMENTS](#). Please allow some time for our editors to approve your comment after posting.

* Required Fields

 Stay Anonymous

Add your comment here


 * Please enter the text you see in the above image.

 Subscribe me to the Free Daily Email

SUBMIT COMMENT

Tel: +27 (0)11 475 1194
info@geoconsult.co.za

HOW?

[HOME](#)

[DISCLAIMER](#)

[BACK TO TOP](#)

+44 845 373 1632
[CLICK HERE FOR INFO](#)

0861 FALCON
or email
info@falconsa.com

www.cosira.com

www.kenyuka.com

Project management services, engineering, design & co-ordination

Mine Health & Safety Seminar
LexisNexis

Cremer Media's **MINING WEEKLY**.COM

Multimedia

- Library
- Video Clips
- Audio Clips
- Real Economy Report
- Second Take
- Company Profiles
- SAFM Show
- Daily Podcasts
- Audio Visual Ads

Sector News

- Base Metals
- Coal
- Diamonds
- Diversified Miners
- Environmental
- Exploration
- Ferrous Metals
- Gold
- Health & Safety
- Legislative Environment

Sector News

- Mining Services
- Platinum
- Silver
- Uranium

Magazine

- News this Week
- Cartoon
- Weekly Features
- Features Library
- Mine Profile
- Project Update
- Tenders
- What's On
- Incentives
- Back Copies

About Us

- Advertising Info
- Subscription Info
- Letters to the Editor
- Tip Us Off
- Website Legal Notice
- About Us
- Contact
- Cremer Media

Any re-distribution of this information is strictly prohibited. Copyright © Creamer Media (Pty) Ltd
Website Credits
sq:0.786 0.918s - 250pq - 3rq