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[Table of Contents 2](#)

[List of Tables & Charts 3](#)

[Study Overview 4](#)

[Sample Text, Table & Chart 5](#)

[Sample Profile, Table & Forecast 6](#)

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World Rare Earths

Industry Study with Forecasts for **2015 & 2020**

Study #2775 | July 2011 | \$6100 | 270 pages

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Table of Contents

EXECUTIVE SUMMARY

MARKET ENVIRONMENT

General	4
World Economic Overview	5
Recent Economic Performance.....	5
World Economic Outlook	7
World Population Outlook.....	11
World Fixed Capital Formation Trends	12
World Manufacturing Outlook	14
World Permanent Magnets Production Trends ..	17
World Catalysts Outlook	19
World Petroleum Refining Outlook.....	21
World Motor Vehicle Production Trends	24
World Crude Steel Production Trends.....	27
World Secondary Battery Outlook.....	28
World Flat Glass Production Trends.....	30
World Electronics Sector Outlook	32
Technology	34
Production & Processing Technologies.....	36
Recycling Technologies.....	39
Competitive Materials.....	40
Pricing Trends.....	41
Legal & Regulatory Environment.....	48

WORLD SUPPLY & DEMAND

General	53
Regional Overview.....	54
Demand	54
Production.....	57
China	58
Rest of World.....	60
Reserves.....	63
International Trade	65
Demand by Product	65
Cerium.....	69
Lanthanum	71
Neodymium	73
Yttrium	76
Dysprosium.....	78
Terbium	80
Europium	82
Other Products	84
Demand by Market.....	86
Permanent Magnets.....	90
Fluid Cracking Catalysts	93
Battery Alloys	95
Glass, Polishing & Ceramics	96
Metal Processing	99
Auto Catalysts.....	101
Phosphors	103
Other Markets	105

Emerging Applications	107
Wind Turbines	108
Solid-Oxide Fuel Cells	109

NORTH AMERICA

General	111
Rare Earths Supply & Demand	113
United States	115
Canada	121
Mexico	125

WESTERN EUROPE

General	129
Rare Earths Supply & Demand	131
France.....	134
Germany	138
Italy	142
United Kingdom.....	146
Other Western Europe	150

ASIA/PACIFIC

General	155
Rare Earths Supply & Demand	157
China	160
Japan.....	166
South Korea	171
India	175
Taiwan	179
Other Asia/Pacific	183

OTHER REGIONS

Central & South America	188
General.....	188
Rare Earths Supply & Demand	190
Eastern Europe	191
General.....	191
Rare Earths Supply & Demand	193
Russia.....	195
Other Eastern Europe.....	199
Africa/Mideast.....	203
General.....	203
Rare Earths Supply & Demand	206

INDUSTRY STRUCTURE

General	208
Industry Composition	209
Market Share	211
Marketing & Distribution	215
Cooperative Agreements.....	216
Mergers & Acquisitions.....	221

COMPANY PROFILES

Alkane Resources	227
Arafura Resources	228
Avalon Rare Metals.....	229
Mongolia Baotou Steel Rare-Earth Group	
Hi-Tech China Minmetals Nonferrous Metals	231
China Rare Earth	232
Frontier Rare Earths.....	234
Ganzhou Qiandong Rare Earth	235
Great Western Minerals	236
Greenland Minerals and Energy.....	241
Grirem Advanced Materials.....	242
Indian Rare Earths	244
Inner Mongolia Baotou Steel	
Rare-Earth Group Hi-Tech	246
Jiangxi Copper.....	250
Lynas Corporation	251
Medallion Resources	253
Molycorp Incorporated.....	254
Neo Material Technologies	257
Quest Rare Minerals.....	260
Rare Element Resources	261
Shin-Etsu Chemical.....	263
Stans Energy	265
Treibacher Industrie	266
Wings Enterprises.....	268
Other Companies Involved in	
the Rare Earths Industry	269

List of Tables/Charts

EXECUTIVE SUMMARY

1 Summary Table.....	3
----------------------	---

MARKET ENVIRONMENT

1 World Gross Domestic Product by Region ..	10
2 World Population by Region	12
3 World Gross Fixed Capital	
Formation by Region	14
4 World Manufacturing Value Added	
by Region	16
Cht World Manufacturing Value Added	
by Region, 2010	17
5 World Permanent Magnet	
Production by Region	19
6 World Catalysts Demand by Region.....	21
7 World Refined Petroleum	
Production by Region	24
8 World Motor Vehicle Production by Region	26
9 World Crude Steel Production by Region...	28
10 World Secondary Battery	
Shipments by Region.....	30

(continued on following page)

List of Tables/Charts

(continued from previous page)

11 World Flat Glass Production by Region	32
12 World Electronic Products	
Shipments by Region	34
13 The Rare Earth Elements	36
14 China's Rare Earth Export	
Quotas, 2005-2010	43
15 World Rare Earths Prices	46
Cht World Rare Earths Spot Prices, June 2011	46
Cht World Rare Earths Prices, 2000-2020	47

WORLD SUPPLY & DEMAND

1 World Rare Earths Demand by Region	56
Cht World Rare Earths Demand	
by Region, 2010	57
2 World Rare Earths Mine	
Production by Region	58
3 Current Rare Earth Projects	62
Cht World Rare Earth Reserves	
by Country, 2010	64
4 World Rare Earths Demand by Product	67
Cht World Rare Earths Demand	
by Product, 2010	68
Cht Increase in Rare Earths Demand	
from 2010 to 2015 by Product	68
5 World Cerium Demand by Region	71
6 World Lanthanum Demand by Region	73
7 World Neodymium Demand by Region	75
8 World Yttrium Demand by Region	78
9 World Dysprosium Demand by Region	80
10 World Terbium Demand by Region	82
11 World Europium Demand by Region	84
12 World Demand for Other	
Rare Earths by Region	86
13 World Rare Earths Demand by Market	88
Cht World Rare Earths Demand	
by Market, 2010	89
Cht Increase in Rare Earths Demand	
from 2010 to 2015 by Market	89
14 World Permanent Magnets Market	
for Rare Earths by Region	92
15 World FCC Market for Rare Earths	
by Region	94
16 World Battery Alloys Market for	
Rare Earths by Region	96
17 World Glass, Polishing & Ceramics	
Market for Rare Earths by Region	98
18 World Metal Processing Market	
for Rare Earths by Region	100
19 World Auto Catalysts Market	
for Rare Earths by Region	102
20 World Phosphors Market for	
Rare Earths by Region	105

21 World Demand for Rare Earths	
in Other Markets by Region	107

NORTH AMERICA

1 North America Market Environment	
for Rare Earths	112
2 North America Rare Earths Demand	
by Product & Market	114
Cht North America Rare Earths Demand	
by Country, 2010	115
3 United States Market Environment	
for Rare Earths	117
4 United States Rare Earths Demand	
by Product & Market	120
5 Canada Market Environment	
for Rare Earths	122
6 Canada Rare Earths Demand	
by Product & Market	124
7 Mexico Market Environment	
for Rare Earths	126
8 Mexico Rare Earths Demand	
by Product & Market	128

WESTERN EUROPE

1 Western Europe Market Environment	
for Rare Earths	130
2 Western Europe Rare Earths Demand	
by Product & Market	133
Cht Western Europe Rare Earths Demand	
by Country, 2010	134
3 France Market Environment	
for Rare Earths	136
4 France Rare Earths Demand	
by Product & Market	138
5 Germany Market Environment	
for Rare Earths	140
6 Germany Rare Earths Demand	
by Product & Market	142
7 Italy Market Environment for Rare Earths	144
8 Italy Rare Earths Demand	
by Product & Market	146
9 United Kingdom Market Environment	
for Rare Earths	148
10 United Kingdom Rare Earths	
Demand by Product & Market	150
11 Other Western Europe Market	
Environment for Rare Earths	152
12 Other Western Europe Rare Earths	
Demand by Product & Market	154

ASIA/PACIFIC

1 Asia/Pacific Market Environment	
for Rare Earths	157
2 Asia/Pacific Rare Earths Demand	
by Product & Market	159

Cht Asia/Pacific Rare Earths Demand	
by Country, 2010	160
3 China Market Environment	
for Rare Earths	163
4 China Rare Earths Demand	
by Product & Market	166
5 Japan Market Environment	
for Rare Earths	168
6 Japan Rare Earths Demand	
by Market & Product	171
7 South Korea Market Environment	
for Rare Earths	173
8 South Korea Rare Earths Demand	
by Product & Market	175
9 India Market Environment	
for Rare Earths	177
10 India Rare Earths Demand	
by Product & Market	179
11 Taiwan Market Environment	
for Rare Earths	181
12 Taiwan Rare Earths Demand	
by Product & Market	183
13 Other Asia/Pacific Market	
Environment for Rare Earths	185
14 Other Asia/Pacific Rare Earths	
Demand by Product & Market	187

OTHER REGIONS

1 Central & South America Market	
Environment for Rare Earths	189
2 Central & South America Rare Earths	
Demand by Product & Market	191
3 Eastern Europe Market Environment	
for Rare Earths	193
4 Eastern Europe Rare Earths Demand	
by Product & Market	195
5 Russia Market Environment	
for Rare Earths	197
6 Russia Rare Earths Demand	
by Product & Market	199
7 Other Eastern Europe Market	
Environment for Rare Earths	201
8 Other Eastern Europe Rare Earths	
Demand by Product & Market	203
9 Africa/Mideast Market Environment	
for Rare Earths	205
10 Africa/Mideast Rare Earths Demand	
by Product & Market	207

INDUSTRY STRUCTURE

1 Rare Earth Sales for Selected	
Companies, 2010	210
Cht World Rare Earths Market Share	
by Company, 2010	211
2 Selected Cooperative Agreements	219
3 Selected Acquisitions & Divestitures	225

Consumption will be driven by increases in battery alloy, electronic product, motor vehicle and permanent magnet output, and will accelerate substantially from the 2005-2010 period.

World demand to rise 7.1% annually through 2015

World demand for rare earths is forecast to expand 7.1 percent per year to 180,000 metric tons in 2015. Consumption will be driven by increases in battery alloy, electronic product, motor vehicle and permanent magnet output. Market growth is expected to accelerate substantially from the 2005-2010 period, when demand in most nations was negatively impacted by substantial and unexpected reductions in Chinese exports beginning in 2009 that led to a sharp rise in rare earths prices.

Permanent magnets among best prospects

Permanent magnets are the largest rare earths market, in terms of both value and volume. Global demand for rare earths used in permanent magnets will climb 10.3 percent annually through 2015, representing both a substantial improvement from the 2005-2010 period and the fastest rate of growth of any major market in volume terms. Sales will be fueled by increases in consumer electronics, electric motor, and hybrid electric and other motor vehicle production. Neodymium-iron-boron (NdFeB) magnets, also known as "neo-magnets," will account for the majority of sales.

World demand for rare earths used in metal processing applications will climb 7.8 percent annually through 2015, exhibiting renewed strength following a

World Rare Earths Demand, 2010 (128,000 metric tons)



Permanent magnets (above) are the largest rare earths market, in both value and volume terms.

China	55%
Other Asia/Pacific	23%
North America	10%
Western Europe	8%
Other Regions	4%

photo: Yueyang Dalishen Electromagnetic Machinery Co., Ltd.

decline between 2005 and 2010. Sales will be stimulated by increased levels of global steel production, particularly high-strength steels and steels with elevated anti-oxidation properties.

Neodymium, dysprosium to be fastest growing types

Neodymium and dysprosium are expected to post the fastest growth rates of any rare earth types, spurred by increased sales of heat-resistant NdFeB permanent magnets. However, cerium will remain the most widely used rare earth, accounting for almost one-third of the 2015 tonnage total. Lanthanum and neodymium will be the second and third most utilized types of rare earths.

Non-Chinese suppliers to lower pricing pressures

China has held a virtual monopoly on rare earths production since the turn of the century. In 2010, Chinese mines produced over 90 percent of world output. Among the major Chinese suppliers are Inner Mongolia Baotou Steel Rare-Earth Hi-Tech Group, China Minmetals and Jiangxi Copper. However, the emergence of non-Chinese suppliers, including Molycorp, Lynas and Great Western Minerals -- combined with increased research and development in rare earths refining technologies -- will boost overall rare earths supplies and eventually reduce upward pricing pressures.

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ASIA/PACIFIC

Japan: Rare Earths Demand

Japan is the second largest market for rare earths in the world, behind China. The nation's rare earth demand rose to 40,000 metric tons in 2010, representing a 40 percent increase over 2005, driven by increases in electronic products and output during the 2005-2010 period. The most significant increase in rare earths contracted between 2005 and 2010 was in permanent magnets, a major market segment (excluding battery alloys) that grew by 100 percent. The most significant increase in rare earth demand was the doubling of demand for battery alloys between 2005 and 2010, as production of nickel-hydroxide (Ni-MH) batteries shifted to lower-priced Chinese manufacturers. Rare earths used in metal processing also registered double-digit growth on a yearly basis. Other important factors that negatively impacted rare earth sales were the unexpected sharp reduction in Chinese export quotas and the resulting exponential hike in rare earths prices.

Although there are no rare earth mining activities in Japan, a number of Japanese companies have rare earth refining facilities. Most notably, Tokyo-based Showa Denko has two subsidiaries in China -- one in Baotou, Inner Mongolia; and one in the city Ganzhou in Jiangxi Province -- with aggregate production capacity of 8,000 metric tons of rare earths per year. In addition, Showa Denko Rare-Earth Vietnam, a subsidiary of Showa Denko, operates a rare earth processing plant in the Ha Nam province of Vietnam. The company's Vietnamese plant refines and produces didymium (a combination of neodymium and praseodymium) and dysprosium metals that are used as raw materials for neodymium-based magnetic alloys.

Japan's largest market for rare earths is permanent magnets, accounting for 47 percent of consumption in 2010. Demand in this segment is fueled in large part by Hitachi Metals' master patents on Neodymium magnets, enabling the company to possess a large share of the market.

169

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**SAMPLE
TEXT**

TABLE VI-5

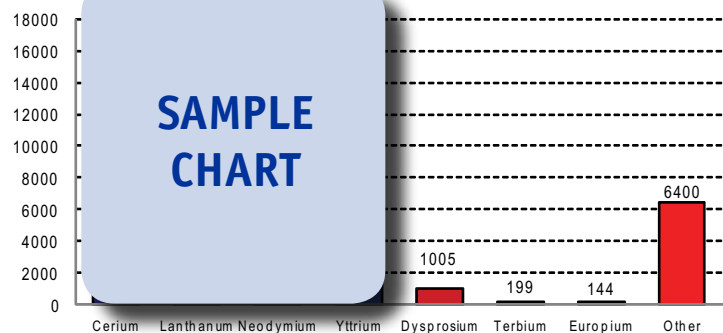
JAPAN MARKET ENVIRONMENT FOR RARE EARTHS

Item	2000	2005	2010	2015	2020
Gross Domestic Product (bil 2009\$)					
per capita GDP					
Population (million persons)					
Manufacturing Value Added (bil 2009\$)					
kg rare earths/mil \$ GDP					
kg rare earths/000 capita					
kg rare earths/mil \$ MVA					
Rare Earths Demand (metric tons)					
% Japan					
Asia/Pacific Rare Earths (metric tons)					

**SAMPLE
TABLE**

CHART III-4

INCREASE IN RARE EARTHS DEMAND FROM 2010 TO 2015 BY PRODUCT (52,000 metric tons)



**SAMPLE
CHART**

Sample Profile, Table & Forecast

TABLE VI-6

JAPAN RARE EARTHS DEMAND BY MARKET & PRODUCT
(metric tons)

Item	2000	2005	2010	2015	2020
Rare Earths Demand	2,000	2,000	2,000	2,000	2,000
By Product:					
Cerium					50
Lanthanum					00
Neodymium					00
Yttrium					65
Dysprosium					35
Terbium					39
Europium					21
Other					90
By Market:					
Permanent Magnets					00
Fluid Cracking Catalysts					85
Battery Alloys					20
Glass, Polishing & Ceramics					45
Metal Processing					55
Auto Catalysts					00
Phosphors					00
Other					2595



COMPANY PROFILES

Jiangxi Copper Company Limited
 15 Yejin Avenue
 Guixi City, Jiangxi 335424
 China
 86-70-1377-7
<http://www.jc>

Revenues: \$
 Rare Earth R
 Employment
 Key Products
 exploration a

ed chemicals; and
 China

Jiangxi Copper is principally involved in the manufacture of copper products, including cathodes, rods, wires, strips and foils. The Company also processes sulfur-based chemicals, precious metals and rare metals.

Jiangxi Copper was the third largest supplier rare earths world-wide in 2010, with an 11.6 percent share of total sales. The Company participates in the world rare earths industry through the production of rare earth-based chemicals, including praseodymium-neodymium alloys; and cerium, lanthanum, neodymium-praseodymium and samarium-europium-gadolinium oxides. These materials can be used in the manufacture of neodymium-iron-boron permanent magnets, ceramic additives and colorants, glass polishing compounds and decolorizing agents, catalysts, hydrogen storage materials and various consumer electronics, among other products. Jiangxi Copper exports its products to countries in the Asia/Pacific region, Europe and North America.

In December 2009, Jiangxi Copper formed Sichuan Jiangtong Rare Earth Company (China), a joint venture with Sichuan Mining

166

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“Japan’s rare earths demand is projected to climb 5.1 percent per year through 2015 to 30,000 metric tons, a notable improvement from 2005-2010 market performance but still below both the regional and global pace of expansion. Phosphors and permanent magnets will exhibit the fastest rates of growth, at 6.3 percent and 6.1 percent per year to 2015, respectively. Demand for rare earths used in permanent magnets will be driven by increases in electronics, motor, motor vehicle and overall manufacturing production.”

--Section VI, pg. 170

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OTHER STUDIES

Advanced Ceramics

This study analyzes the US advanced ceramics industry. It presents historical demand data for the years 2000, 2005 and 2010, and forecasts for 2015 and 2020 by ceramic type (e.g., alumina, titanate, ferrite, zirconate, silicon), product (e.g., monolithics, coatings, matrix composites), process and market (e.g., electronic components, electrical equipment, machinery). The study also considers market environment factors, details industry structure, evaluates company market share and profiles industry players.
 #2794 August 2011 \$4900

Specialty Silicas

US demand for specialty silica is forecast to rise 5.8 percent annually through 2015. Fumed silica will be the fastest growing type, fueled by a strong rebound in nontire rubber consumption. Precipitated silica will remain the leading segment, based in part on gains in silica-reinforced low rolling-resistance tires, which offer greater fuel efficiency than conventional tires. This study analyzes the \$1.3 billion US specialty silica industry, with forecasts for 2015 and 2020 by product and market. The study also evaluates company market share and profiles industry players.
 #2762 May 2011 \$4800

World Catalysts

Global catalyst demand will rise six percent per year through 2014. Chemical synthesis and polymerization catalysts will lead gains, based on rapid growth in the Middle East, Asia, and Brazil. Petroleum refining catalyst demand will expand at a healthy pace, but will be limited by weak motor vehicle fuel demand in developed countries. This study analyzes the \$12.8 billion world catalyst industry, with forecasts for 2014 and 2019 by material, product, market, world region and for 25 countries. It also evaluates company market share and profiles industry players.
 #2730 March 2011 \$6200

World Nanomaterials

Global nanomaterial demand will rise 21 percent annually through 2013. Health care will surpass electronics as the largest market in value terms by 2013, while the energy market grows the fastest. The US, Western Europe and Japan will remain the largest markets, while demand in China leads gains. This study analyzes the \$1.4 billion world nanomaterial industry, with forecasts for 2013, 2018 and 2025 by material, market, world region and for 15 countries. It also considers market environment factors and profiles 125 industry participants.
 #2612 March 2010 \$5900

Battery & Fuel Cell Materials

US demand for materials used in batteries and fuel cells will decline 2.5 percent annually through 2013, largely due to a moderation in raw material prices. In volume terms, however, materials demand will rebound due to an improvement in US battery production. Performance additives and catalysts will see the fastest gains by function. This study analyzes the \$4.9 billion US battery and fuel cell material industry, with forecasts for 2013 and 2018 by type, function and application. It also evaluates market share and profiles industry players.
 #2574 November 2009 \$4700

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