STUDY GOAL AND OBJECTIVES
This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES
◆ To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
◆ To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
◆ To complement the organizations’ internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
◆ To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
◆ To help company to succeed in a competitive market, and

METHODOLOGY
Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES
The primary information sources include Company Reports, and National Bureau of Statistics of China etc.
Abstract

The world’s recoverable vanadium reserves so far has been recorded at 14 million tons, mainly found in China, Russia, South Africa and other countries. In 2013, roughly 151,000 tons of vanadium (V2O5 Equivalent) was produced worldwide, up 11% year on year. The global vanadium consumption increased at an AAGR of 6.7% during the period 2001-2013, of which, the iron and steel industry as the biggest consumer accounted for more than 90% in 2013, followed by vanadium-titanium alloy and chemical industry.

China, the world’s largest vanadium-producing country with a capacity of over 100 kt/a, contributed 57% to the world’s vanadium (V2O5 Equivalent) production in 2013. It also has the fastest-growing and highest consumption of vanadium products in the world, with vanadium (V2O5 Equivalent) consumption rising from 5.3 kilotons to 57 kilotons in 2001-2013 (an AAGR of 22% or so) as a result of promotion and use of vanadium-containing high-strength deformed steel bars grade III and grade IV.

China’s vanadium industry is highly concentrated in Pangang Group Vanadium Titanium & Resources Co., Ltd., Hebei Iron & Steel Group Co., Ltd. and other big steelmakers since most of the early vanadium ore investors such as Xining Special Steel Co., Ltd., Zhejiang Hailiang Co., Ltd. and Shanghai Dingli Technology Development (Group) Co., Ltd. haven’t entered substantial production yet.

Distribution of Minable Vanadium Reserves Worldwide, 2014
Pangang Group Vanadium Titanium & Resources as China’s largest vanadium production enterprise now boasts a production capacity of 20 kt/a vanadium product (V2O5 Equivalent). Besides, it is the only high-vanadium ferroalloy (FeV80) manufacturer there. In the first half of 2014, the company’s vanadium products reaped RMB1.61 billion in revenue, down 4.8% year on year.

Hebei Iron & Steel is one of the largest vanadium-titanium production bases in China. It now has six vanadium-nitrogen alloy production lines, with products exported to more than 10 countries and regions, representing an approximately 8% share in global vanadium market. The company’s revenue from vanadium products in the first half of 2014 was RMB388 million, up 2.4% year on year.

Global and China Vanadium Industry Report, 2014-2017 by ResearchInChina focuses on the followings:
- Vanadium ore resources and output, demand and price of vanadium products in the world;
- Vanadium ore resources and supply & demand, price, import & export of vanadium products in China;
- Profile, operation, vanadium business and others of four global manufacturers of vanadium products (Atlantic Ltd, Highveld Steel and Vanadium Corporation, EVRAZ and Vanadium Corp);
- Profile, operation, vanadium business and others of eight Chinese manufacturers of vanadium products (such as Pangang Group Vanadium Titanium & Resources, Hebei Iron & Steel, Xining Special Steel, and so on).
## Table of contents

1. Introduction to Vanadium
   1.1 Definition
   1.2 Industry Chain

2. Global Vanadium Market
   2.1 Vanadium Ore Resources
   2.2 Supply
   2.3 Demand
   2.4 Price

3. China Vanadium Market
   3.1 Vanadium Ore Resources
   3.2 Supply
   3.3 Demand
   3.4 Price
   3.5 Import and Export

4. Major Vanadium Manufacturers in the World
   4.1 Atlantic Ltd
     4.1.1 Profile
     4.1.2 Operation
     4.1.3 Vanadium Business
   4.2 Highveld Steel and Vanadium Corporation
     4.2.1 Profile
     4.2.2 Operation
     4.2.3 Revenue Structure
     4.2.4 Vanadium Business

5. Major Vanadium Manufacturers in China
   5.1 Pangang Group Vanadium Titanium & Resources
     5.1.1 Profile
     5.1.2 Operation
     5.1.3 Revenue Structure
     5.1.4 Gross Margin
     5.1.5 Clients and Suppliers
     5.1.6 Vanadium Business
     5.1.7 Prospects
   5.2 Xining Special Steel
     5.2.1 Profile
     5.2.2 Operation
     5.2.3 Revenue Structure
     5.2.4 Gross Margin
     5.2.5 Clients and Suppliers
     5.2.6 Vanadium Business
     5.2.7 Prospects
   5.3 Hebei Iron & Steel
     5.3.1 Profile
     5.3.2 Operation
     5.3.3 Revenue Structure
     5.3.4 Gross Margin
     5.3.5 Clients and Suppliers
     5.3.6 Vanadium Business
     5.3.7 Prospects
   5.4 Guangdong Boxin Investing & Holdings
     5.4.1 Profile
     5.4.2 Operation
     5.4.3 Revenue Structure
     5.4.4 Gross Margin
     5.4.5 Clients and Suppliers
     5.4.6 Vanadium Business
     5.4.7 Prospects
   5.5 Shanghai Dingli Technology Development
     5.5.1 Profile
     5.5.2 Operation
     5.5.3 Revenue Structure
     5.5.4 Gross Margin
     5.5.5 Clients and Suppliers
     5.5.6 Vanadium Business
     5.5.7 Prospects
   5.6 Sichuan Mingxing Electric Power
   5.7 Chengdu Tianxing Instrument And Meter
   5.8 Zhejiang Hailiang

6. Summary and Forecast
   6.1 Summary
   6.2 Forecast
• Utilization Ways for Major Vanadium Resources in the World
• Vanadium Industry Chain
• Proportion of Global Vanadium Reserves (by Country)
• Proportion of Global Recoverable Vanadium Reserves (by Country)
• Proportion of Global Vanadium Production (by Country/Region), 2013
• Proportion of Global Vanadium Production (by Different Raw Materials), 2013
• Cash Cost Curve of Global Vanadium (by Different Raw Materials), 2013
• Global Vanadium Production (by Country/Region), 2001-2013
• Changes in Global Vanadium Product Inventory, 2011-2013
• Proportion of Global Vanadium Consumption (by Country/Region), 2013
• Proportion of Global Vanadium Consumption (by Applications), 2013
• Global Vanadium Consumption (by Country/Region), 2001-2013
• Average Price of V2O5 (Content ≥98%) in Europe, 2003-2014
• Average Price of Ferrovanadium (Content 70-80%) in Europe, 2003-2014
• Average Price of Ferrovanadium (Content 70-80%) in Pittsburgh Depot, USA, 2013-2014
• Distribution of Vanadium Ore Resources in China
• Vanadium (V2O5 Equivalent) Output in China, 2001-2013
• Consumption of Vanadium Products (V2O5 Equivalent) in China, 2001-2013
• Consumption Structure of Vanadium (by Sector) in China, 2013
• Comparison of China with Other Major Powers in Iron & Steel Products’ Consumption of Vanadium
• Average Price of Vanadium (Content ≥99.5%) in China, 2005-2014
• Average Price of Vanadium-Nitrogen Alloy in China, 2011-2014
• Import Volume and Value of Vanadium Pentoxide (V2O5) in China, 2011-2014
• Export Volume and Value of Vanadium Pentoxide (V2O5) in China, 2011-2014
• China’s Export Volume and Value of Vanadium Pentoxide (V2O5) to Top 10 Export Destinations, 2014
<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrovanadium (by Differed Content of Vanadium) Export Volume of China</td>
<td>2011-2014</td>
</tr>
<tr>
<td>Revenue and Net Income of Atlantic Ltd.</td>
<td>2010-2013</td>
</tr>
<tr>
<td>Mineral Resources – Windimurra Vanadium Project</td>
<td></td>
</tr>
<tr>
<td>Revenue and Net Income of Highveld Steel and Vanadium</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Revenue and Net Income of Highveld Steel and Vanadium (by Business)</td>
<td>2012-2013</td>
</tr>
<tr>
<td>Revenue of Highveld Steel and Vanadium (by Region)</td>
<td>2012-2013</td>
</tr>
<tr>
<td>Vanadium Slag Output of Highveld Steel and Vanadium</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Sales Volume of Vanadium Products of Highveld Steel and Vanadium</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Revenue from Vanadium Slag of Highveld Steel and Vanadium</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Revenue and Net Income of Evraz</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Revenue of Evraz (by Business)</td>
<td>2011-2013</td>
</tr>
<tr>
<td>Revenue Structure of Evraz (by Region)</td>
<td>2011-2013</td>
</tr>
<tr>
<td>Vanadium Ore Resources of Evraz</td>
<td></td>
</tr>
<tr>
<td>Vanadium Slag Output of Evraz (by Region)</td>
<td>2011-2013</td>
</tr>
<tr>
<td>Vanadium Slag Output of Evraz (by Plant)</td>
<td>2011-2013</td>
</tr>
<tr>
<td>ASP of Vanadium of Evraz (by Product)</td>
<td>2011-2013</td>
</tr>
<tr>
<td>Revenue and Net Income of Pangang Group Vanadium Titanium &amp; Resources</td>
<td>2009-2014</td>
</tr>
<tr>
<td>Revenue Structure of Pangang Group Vanadium Titanium &amp; Resources (by Product)</td>
<td>2009-2014</td>
</tr>
<tr>
<td>Revenue Structure of Pangang Group Vanadium Titanium &amp; Resources (by Region)</td>
<td>2009-2014</td>
</tr>
<tr>
<td>Gross Margin of Pangang Group Vanadium Titanium &amp; Resources (by Product)</td>
<td>2009-2014</td>
</tr>
<tr>
<td>Pangang Group Vanadium Titanium &amp; Resources’ Combined Procurement from Top 5 Suppliers and % of Total Procurement,</td>
<td>2009-2013</td>
</tr>
<tr>
<td>Pangang Group Vanadium Titanium &amp; Resources’ Combined Revenue from Top 5 Customers and % of Total Revenue,</td>
<td>2008-2013</td>
</tr>
<tr>
<td>Production and Sales Volume of Vanadium Products of Pangang Group Vanadium Titanium &amp; Resources,</td>
<td>2011-2013</td>
</tr>
<tr>
<td>Cost Structure of Vanadium Products of Pangang Group Vanadium Titanium &amp; Resources,</td>
<td>2013</td>
</tr>
<tr>
<td>Revenue from Vanadium Products of Pangang Group Vanadium Titanium &amp; Resources,</td>
<td>2009-2014</td>
</tr>
</tbody>
</table>
• Revenue and Net Income of Pangang Group Vanadium Titanium & Resources, 2012-2016E
• Revenue and Net Income of Xining Special Steel, 2009-2014
• Revenue Structure of Xining Special Steel (by Product), 2009-2014
• Revenue Structure of Xining Special Steel (by Region), 2009-2014
• Gross Margin of Xining Special Steel (by Product), 2010-2014
• Xining Special Steel's Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2009-2013
• Xining Special Steel's Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Net Assets and Net Income of Subei Bolun Mining Development Co., Ltd., 2010-2014
• Revenue and Net Income of Xining Special Steel, 2013-2016E
• Revenue and Net Income of Hebei Iron & Steel, 2009-2014
• Revenue Structure of Hebei Iron & Steel (by Business), 2009-2014
• Revenue Structure of Hebei Iron & Steel (by Region), 2009-2014
• Gross Margin of Hebei Iron & Steel (by Product), 2009-2014
• Hebei Iron & Steel's Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2009-2013
• Hebei Iron & Steel's Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Vanadium Slag Output of Hebei Iron & Steel, 2009-2014
• Revenue from Vanadium Products of Hebei Iron & Steel, 2009-2014
• Revenue and Net Income of Hebei Iron & Steel, 2013-2016
• Revenue and Net Income of Guangdong Boxin Investing & Holdings, 2009-2014
• Revenue Structure of Guangdong Boxin Investing & Holdings (by Business), 2012-2014
• Gross Margin of Guangdong Boxin Investing & Holdings (by Product), 2012-2014
• Guangdong Boxin Investing & Holdings' Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2013
• Guangdong Boxin Investing & Holdings’ Combined Revenue from Top 5 Customers and % of Total Revenue, 2013
• Vanadium Resource Reserves of Guizhou Boxin Mining Co., Ltd.
• Revenue and Net Income of Guangdong Boxin Investing & Holdings, 2013-2016E
• Revenue and Net Income of Shanghai Dingli Technology Development, 2009-2014
• Revenue Structure of Shanghai Dingli Technology Development (by Business), 2009-2014
• Gross Margin of Shanghai Dingli Technology Development (by Product), 2010-2014
• Shanghai Dingli Technology Development’s Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Shanghai Dingli Technology Development’s Procurement from Top 5 Suppliers, 2013
• Revenue and Net Income of Shanghai Dingli Technology Development, 2013-2016E
• Revenue and Net Income of Sichuan Mingxing Electric Power, 2009-2014
• Revenue Structure of Sichuan Mingxing Electric Power (by Business), 2009-2014
• Gross Margin of Sichuan Mingxing Electric Power (by Product), 2009-2014
• Sichuan Mingxing Electric Power’s Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Sichuan Mingxing Electric Power’s Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2011-2013
• Revenue and Net Income of Sichuan Mingxing Electric Power, 2013-2016E
• Revenue and Net Income of Chengdu Tianxing Instrument And Meter, 2009-2014
• Revenue Structure of Chengdu Tianxing Instrument And Meter (by Business), 2009-2014
• Revenue Structure of Chengdu Tianxing Instrument And Meter (by Region), 2009-2014
• Gross Margin of Chengdu Tianxing Instrument And Meter (by Product), 2009-2014
• Chengdu Tianxing Instrument And Meter’s Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2009-2013
• Chengdu Tianxing Instrument And Meter’s Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Revenue and Net Income of Chengdu Tianxing Instrument And Meter, 2013-2016E
• Revenue and Net Income of Zhejiang Hailiang, 2009-2014
• Revenue Structure of Zhejiang Hailiang (by Business), 2009-2014
• Revenue Structure of Zhejiang Hailiang (by Region), 2009-2014
• Gross Margin of Zhejiang Hailiang (by Product), 2009-2014
• Zhejiang Hailiang’s Combined Procurement from Top 5 Suppliers and % of Total Procurement, 2009-2013
• Zhejiang Hailiang’s Combined Revenue from Top 5 Customers and % of Total Revenue, 2009-2013
• Revenue and Net Income of Honghe Henghao Mining Co., Ltd, 2009-2014
• Revenue and Net Income of Zhejiang Hailiang, 2013-2016E
• Gross Margin of Key Vanadium Manufacturers in China, 2009-2014
• Vanadium (V2O5 Equivalent) Output in China, 2013-2017E
• Iron & Steel Products' Consumption of Vanadium (by Country/Region) Worldwide, 2001-2020E
You can place your order in the following alternative ways:

1. Order online at www.researchinchina.com
2. Fax order sheet to us at fax number: +86 10 82601570
3. Email your order to: report@researchinchina.com
4. Phone us at +86 10 82600828/ 82601561

Choose type of format

- PDF (Single user license) ……………1,900 USD
- Hard copy …………………………… 2,000 USD
- PDF (Enterprisewide license)……….. 3,000 USD

※ Reports will be dispatched immediately once full payment has been received.
Payment may be made by wire transfer or credit card via PayPal.

| Party A: | Party B:
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Beijing Waterwood Technologies Co., Ltd (ResearchInChina)</td>
</tr>
<tr>
<td>Address:</td>
<td>Room 502, Block 3, Tower C, Changyuan Tiandi Building, No. 18, Suzhou Street, Haidian District, Beijing, China 100080</td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Liao Yan</td>
</tr>
<tr>
<td>E-mail:</td>
<td><a href="mailto:report@researchinchina.com">report@researchinchina.com</a></td>
</tr>
<tr>
<td>Tel:</td>
<td>86-10-82600828</td>
</tr>
<tr>
<td>Fax:</td>
<td>86-10-82601570</td>
</tr>
</tbody>
</table>

Bank details:
- Beneficial Name: Beijing Waterwood Technologies Co., Ltd
- Bank Name: Bank of Communications, Beijing Branch
- Bank Address: NO.1 jinxiyuan shijicheng,Landianchang,Haidian District,Beijing
- Bank Account No #: 110060668012015061217
- Routing No #: 332906
- Bank SWIFT Code: COMMCNSHBJG

<table>
<thead>
<tr>
<th>Title</th>
<th>Format</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
About ResearchInChina

ResearchInChina (www.researchinchina.com) is a leading independent provider of China business intelligence. Our research is designed to meet the diverse planning and information needs of businesses, institutions, and professional investors worldwide. Our services are used in a variety of ways, including strategic planning, product and sales forecasting, risk and sensitivity management, and as investment research.

Our Major Activities

- **Multi-users market reports**
- **Database-RICDB**
- **Custom Research**
- **Company Search**

**RICDB** (http://www.researchinchina.com/data/database.html), is a visible financial data base presented by map and graph covering global and China macroeconomic data, industry data, and company data. It has included nearly 500,000 indices (based on time series), and is continuing to update and increase. The most significant feature of this base is that the vast majority of indices (about 400,000) can be displayed in map.

After purchase of our report, you will be automatically granted to enjoy 2 weeks trial service of RICDB for free.

After trial, you can decide to become our formal member or not. We will try our best to meet your demand. For more information, please find at www.researchinchina.com

For any problems, please contact our service team at:

Room 502, Block 3, Tower C, Changyuan Tiandi Building, No. 18, Suzhou Street, Haidian District, Beijing, China 100080
Phone: +86 10 82600828 ● Fax: +86 10 82601570 ● www.researchinchina.com ● report@researchinchina.com