Global Refractories Market

Magnesita Corporate Strategy

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Magmin 2015
Brazilian Market
During the last 20 years Magnesita has played an active role in the evolution of the Steel Industry in Brazil.

Building partnerships with all major players in the market.

Source: CRU Group, *Internal Estimates
Magnesita has worked along with the main players of the cement market on the foundation of mutual growth.

Cement Production Brazil (Mton)

34,8  38,9  41,9  46,6  51,3  51,6  59,1  64,1  68,8  70,0  69,8  69,2

Source: CW Group, *Internal Estimates

CAGR 3.3%

CAGR 3.2%

Attending the market through a just-in-time business model
MgO production evolution in Brazil

CAGR 2.6%

<table>
<thead>
<tr>
<th>Year</th>
<th>MgO production (kton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>421</td>
</tr>
<tr>
<td>2009</td>
<td>410</td>
</tr>
<tr>
<td>2010</td>
<td>484</td>
</tr>
<tr>
<td>2011</td>
<td>484</td>
</tr>
<tr>
<td>2012</td>
<td>485</td>
</tr>
<tr>
<td>2013</td>
<td>459</td>
</tr>
<tr>
<td>2014</td>
<td>490</td>
</tr>
</tbody>
</table>

Source: USGS, Brazilian Ministry of Mines and Energy, Internal Estimates

Steady production of MgO and increasing participation in international markets
Magnesita is ready to supply the market with its premium quality products

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBM</td>
<td>270</td>
<td>288</td>
<td>315</td>
<td>302</td>
<td>333</td>
<td>331</td>
<td>350</td>
</tr>
<tr>
<td>CCM</td>
<td>303</td>
<td>313</td>
<td>350</td>
<td>344</td>
<td>385</td>
<td>388</td>
<td>57</td>
</tr>
</tbody>
</table>

Constant growth shows that we are being more productive and ready to attend the markets needs

Source: Internal Estimates
Refractories production evolution in Brazil

CAGR 2.1%

<table>
<thead>
<tr>
<th>Year</th>
<th>Magnesia Bricks</th>
<th>Other Refractory Products (kton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>543</td>
<td>413</td>
</tr>
<tr>
<td>2009</td>
<td>554</td>
<td>462</td>
</tr>
<tr>
<td>2010</td>
<td>514</td>
<td>439</td>
</tr>
<tr>
<td>2011</td>
<td>568</td>
<td>514</td>
</tr>
<tr>
<td>2012</td>
<td>597</td>
<td>443</td>
</tr>
<tr>
<td>2013</td>
<td>614</td>
<td>466</td>
</tr>
</tbody>
</table>

Source: Internal Estimates

Increasing competition in the market
Global Market Trends
The Steel Industry’s slowdown in growth will impact even further the reduction of refractories demand.
Global Market Trends: Migration from bricks to monolithics

World Refractory Consumption Distribution

- Bricks & Shapes
- Monolithics & Other

Source: Freedonia
China is expected to remain the largest refractory finished goods and raw materials producer and exporter despite the 2014 reduction.
Chinese companies have joined the industries’ consolidation/merging trend

In 2013, acquired Hunang Xianggang Refractories and Zaozhuang Gaize Furnace Engineering

In 2014, Shandong Luyang Share Co. acquired Unifrax (Suzhou) unit

In 2013, Puyang Refractories acquired Zhengzhou Huawei Refractories Co., Ltd. and in 2014, Maanshan Yushan Metallurgical New Materials and Zhengzhou Huite Refractory Material Co.

In 2014, Beijing Lier Hight Temperature Materials acquired Shanghai Xintaishan High-temperature Engineering Materials Co. and finalized its mergers of Liaoning Jinhong Mining and Liaoning Zhongxing Mining

Source: Global and China Refractory Material Industry Report 2014-2016, ReasearchinChina
Global Market Trends: The rise of Chinese players

2020 Chinese Government Goal

- Company driven/Independent innovation
- Flat local production growth from main customer industries
- Expected total refractories output in 2015 to decrease from 28 to 26 Mtons (2 Mtons available for exports)
- Market-driven strategy
- Technical cooperation approach
- Receivables and profits improvement

Source: Refractories Window

10 Refractory Producers

45% Production and Market Concentration
Global Market Trends:
Western refractories players will continue the industry’s consolidation process

Refractory Industry - Main Players’ Revenue
Values in USD Millions

* 2014 figures from publicly held companies and estimates for others
Global Market Trends: Differentiation between commodities and added value solutions

Full Solution
- Services
- Technical Assistance
- Research and Development
- Customized Product

Commodity

Capitalize on potential for internal costs reduction
- Refractory consumption
- Conversion efficiency
- Equipment availability
- Other inputs consumption

Standard Product
Magnesita’s strategy
**Vision:**
Be the best provider of refractories solutions and industrial minerals, leveraging and developing our minerals base.

**Ensure leadership in our core markets**
- Strive to keep offering high quality and innovative products, unrivaled services and cost performance

**Grow strong and selectively**
- Pursue long term growth opportunities in selected markets where we can deliver superior value to our customers and shareholders

**Expand industrial minerals base**
- Continue to develop high quality, low cost raw material sources to support our current businesses as well as new businesses where we can have a sustainable competitive advantage

**Maintain a global low cost production base**
- Optimize production globally to improve efficiency and support growth
- Develop global supply chain management

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**Our values**
- Customer
- People
- Meritocracy
- Ethics
- Profit
- Management and Method
- Agility and Transparency
- Respect for Safety, Environment and Communities

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**One global organization**
Global presence to attend a wide range of customers

- Dolomite Mine Sinterco JV (BEL)
- Production Units York (EUA) and Coronel Fabriciano (BRA)
- Dolomite Mine Qingyang (CHN)
- Production Units Hagen-Hilden, Oberhausen e Kruft (DEU)
- Dolomite Mine Qingyang (CHN) and Chizhou (CHN)
- Production Unit Dalian (CHN)
- Production Unit Taiwan JV (CHN)
- Clay Unit (Uberaba, BRA)
- Magnesite Mine (Brumado, BRA)
- Cromite Mine (BRA)
- Talc Mine (BRA)
- Aratu Port
- Production Unit Contagem (BRA)
- Production Unit Coronel Fabriciano (BRA)
- Production Unit San Nicolás (ARG)
- Production Unit Hagen, Valenciennes and Flaumont (FRA)

- Aratu Port
- Headquarters
- Production Units
- Mines
- Commercial Offices/Representatives
Ensuring Leadership in our core markets
Through our competitive advantages and reinforcing long term partnerships with the customers

Competitive advantages in key markets
- Verticalized and low cost producer
- Continuous investment on R&D and technology
- Specialized technical assistance
- Logistic advantages through privileged locations
- Contracts based on performance aligning goals with customers
- Historical leadership and brand recognition

Market Share in Key Markets

- Dolomite and Magnesia Products in North America
- Dolomite Products in Western Europe
- Stainless Steel Mini-mills
- Stainless Steel Mini-mills
- Complete line of products for the industry in South America
- Steel Cement

Long term partnerships with Blue Chip Customers

 GERDAU ArcelorMittal USIMINAS Votorantim Siderurgia ThyssenKrupp CSN Acerinox NUCOR Outokumpu InterCement Holcim Ternium SCHMOLZ + BICKENBACH CEMEX

Long term partnerships with Blue Chip Customers
Geographical Diversification Opportunities

<table>
<thead>
<tr>
<th>Region</th>
<th>% of refractory sales per region (in BRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>14%</td>
</tr>
<tr>
<td>Europe</td>
<td>20%</td>
</tr>
<tr>
<td>North America</td>
<td>23%</td>
</tr>
<tr>
<td>Others</td>
<td>43%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>14%</td>
</tr>
<tr>
<td>Europe</td>
<td>21%</td>
</tr>
<tr>
<td>North America</td>
<td>25%</td>
</tr>
<tr>
<td>Others</td>
<td>41%</td>
</tr>
</tbody>
</table>

Diversification on the Industrial Segment

Refractory Sales for Industrial customers (BRL M) and % of the refractory business

<table>
<thead>
<tr>
<th>Year</th>
<th>Refractory Sales (BRL M)</th>
<th>% of the refractory business</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>278</td>
<td>13.7%</td>
</tr>
<tr>
<td>2012</td>
<td>360</td>
<td>17.0%</td>
</tr>
<tr>
<td>2013</td>
<td>430</td>
<td>18.2%</td>
</tr>
</tbody>
</table>

Global refractory consumption per segment

- Industrial: 41.5%
- Steel: 58.5%

Source: Freedonia

Volume sold to the Steel Market (kton)

- 2013: 605 kton
- 2014: 662 kton

Key markets Steel production growth

- 9M13: +2.2%
- 9M14: +9%

Market Share gains

- 9M13: 23%
- 9M14: 13%

Share gains in New Markets

- 9M13: +6.0%
- 9M14: +64%
Acquisition of Reframec Services

- The Reframec acquisition reinforces Magnesita’s leadership in its core industrial markets in South America as it expands its services beyond the steel industry.
- Reframec is a leader in engineering, installation and repair services for refractories used in cement production in Brazil.
- Reframec continues to operate independently though aligned with Magnesita’s growth strategy.
Expand our industrial minerals base
Leveraging on Magnesita’s resources and expertise

Magnesita’s Strategic Position

- Attractive mineral rights portfolio
- 70 years of mining experience in Brazil
- Local geology, research, license and legal requirements knowledge
- Good relationship with local stakeholders

Brazil Opportunity

- Historically unexplored
- Seen as a quality and trustworthy raw material supplier (vs. China)

Actions Focus

- Minerals out of the big players’ main plans
- US$2bi - US$10bi global markets
- Gap between supply and demand
- Commercial development required
- Moderate logistics impact
Expand our industrial minerals base
Supplying the market with a range of the best mineral products

**MgO → CCM and DBM**

- Increasing production capacity for CCM
- Currently around 10-15% of Brumado’s production turns into CCM
- CCM with some of the best qualities in the market
- High purity, high concentration of MgO and high reactivity
- Volume per sale is usually smaller than other minerals

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Brand</th>
<th>MgO %</th>
<th>Fe2O3 %</th>
<th>SiO2 %</th>
<th>MnO %</th>
<th>CaO %</th>
<th>Al2O3 %</th>
<th>Loose Density (g/cm3)</th>
<th>Tapped Density (g/cm3)</th>
<th>Bulk Density (g/cm3)</th>
<th>Loss on Ignition (1000ºC x 1h)</th>
<th>Reactivity Acetic Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCM</td>
<td>QMAG 65-F-R</td>
<td>94,20</td>
<td>2,20</td>
<td>1,60</td>
<td>0,90</td>
<td>0,70</td>
<td>0,40</td>
<td>0,70</td>
<td>1,30</td>
<td>-</td>
<td>≤ 6,5</td>
<td>≤ 250</td>
</tr>
<tr>
<td>CCM</td>
<td>QMAG 200-AR</td>
<td>98,30</td>
<td>0,40</td>
<td>0,30</td>
<td>0,10</td>
<td>0,80</td>
<td>0,20</td>
<td>0,60</td>
<td>1,00</td>
<td>-</td>
<td>≤ 2,0</td>
<td>≤ 70</td>
</tr>
<tr>
<td>CCM</td>
<td>QMAG 500-PREMIUM</td>
<td>98,40</td>
<td>0,40</td>
<td>0,10</td>
<td>0,10</td>
<td>0,90</td>
<td>0,01</td>
<td>0,60</td>
<td>1,10</td>
<td>-</td>
<td>≤ 9,0</td>
<td>≤ 50</td>
</tr>
<tr>
<td>CCM</td>
<td>QMAG 65</td>
<td>94,90</td>
<td>2,00</td>
<td>1,40</td>
<td>0,90</td>
<td>0,50</td>
<td>0,40</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>≤ 8,0</td>
<td>-</td>
</tr>
<tr>
<td>DBM</td>
<td>SINTER M7</td>
<td>95,55</td>
<td>2,30</td>
<td>1,30</td>
<td>0,96</td>
<td>0,49</td>
<td>0,39</td>
<td>-</td>
<td>-</td>
<td>2,73</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DBM</td>
<td>SINTER M10</td>
<td>94,55</td>
<td>2,30</td>
<td>1,30</td>
<td>0,96</td>
<td>0,49</td>
<td>0,39</td>
<td>-</td>
<td>-</td>
<td>3,04</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DBM</td>
<td>SINTER M30B</td>
<td>98,33</td>
<td>0,39</td>
<td>0,25</td>
<td>0,09</td>
<td>0,87</td>
<td>0,07</td>
<td>-</td>
<td>-</td>
<td>3,31</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Expand our industrial minerals base
Leveraging on Magnesita’s resources and expertise

Talc Production - Capacity Expansion

- Increase production capacity from 44kton/yr to 60kton/yr in Brazil
- Capex investments of ~ R$ 20 million to be made in the next 3 to 5 years
- Attractive gross margin

High quality Talc for some of the biggest global players

Johnson & Johnson
AVON
Macroplast
Roche
Novartis
Pirelli
Magnesita
Magnesite Mine - Brumado, Brazil
- World’s finest quality (+98.5% DBM)
- Biggest mine outside China
- Reserves for the next 200 years

Dolomite Mine - York, USA
- Only refractory dolomite mine in USA
- Mine integrated to the refractories production facilities
- More than 45 years of reserves

Dolomite Mine (JV) - Belgium (+30 years of reserves)
Dolomite Mine - Qingyang, China (+50 years of reserves)
Chromite Mine - Bahia, Brasil (+28 years of reserves)
Other reserves in Brazil: dolomite, clay, pyrophyllite and talc

Magnesita is the most verticalized company in the industry with approximately 80% of raw materials volume sourced internally
Maintain a Global low cost production base
Optimize our footprint with the Dalian production unit

General Information

Easy access to 20% of the world’s magnesite deposits located in the Liaoning Province

Great logistics hub (seaport, rail and airport within 24 km range)

More than 12,000 foreign-invested companies operate in the region, including 186 of the Fortune 500 companies.

Start-up in 2007, acquired by Magnesita in 2013

Current capacity of 50,000 t/year of MagCarbon/MAC/AMC bricks

Potential for expansion to 150,000 t/year with further investment (mostly pressing).

Facilities

State of the art automation system

Modern equipment ensuring an excellent mixing preparation concerning grain size and a very precise dosing system

Products

Wide range of products for EAF, BOF and Steel Ladle applications
Solutions provider in refractories and industrial minerals with high quality and performance