Butyl Rubber – The Enabler of Mobility

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Head of Business Unit Butyl Rubber
Duesseldorf, September 15, 2010

Agenda

- Butyl Rubber – Business overview
- Growth drivers
- Investments
- Outlook
Business Unit Butyl Rubber – A premium supplier of high-quality butyl and halobutyl rubbers

Butyl Rubber – Business overview

<table>
<thead>
<tr>
<th>Performance Polymers</th>
<th>Applications Butyl Rubber</th>
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<tbody>
<tr>
<td>Butyl Rubber</td>
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<td>Performance Butadiene Rubbers</td>
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<td>Technical Rubber Products</td>
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<td>Semi-Crystalline Products</td>
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- **Facts**
  - Production capacity: ~400,000 t/a (all announced investments)
  - Sales: >€500 m
  - Employees: ~900
  - Customers: >200

- **Products & brands**
  - Product groups: Regular butyl, Halobutyl
  - Main brands: Butyl, Bromobutyl, Chlorobutyl

- **Markets & competition**
  - Share: LANXESS No. 2 in oligopolistic market
  - Market size: ~€2.2 bn in 2010e
  - Competitors: ExxonMobil Chemicals, Sinopec, Nizhnekamskneftekhim, Sibur Holding
Butyl Rubber – A market leader in synthetic rubber

<table>
<thead>
<tr>
<th>Butyl rubber end uses* 2008-2010e</th>
<th>Global demand**</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="" alt="Diagram showing Butyl Rubber end uses: Tire 84%, Pharma 7%, Gum 4%, Others 9% in 2008; Tire 76%, Others 11%, Gum 4%, Pharma 5% in 2010e." /></td>
<td><img src="" alt="Diagram showing Global demand: Americas 21%, APAC 57%, EMEA 22%." /></td>
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</tbody>
</table>

* Based on BU sales; ** LANXESS estimates

LANXESS is the only true global player in butyl rubber

<table>
<thead>
<tr>
<th>Butyl world map 2010</th>
<th>Market landscape 2010</th>
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<tbody>
<tr>
<td><img src="" alt="Butyl world map showing LANXESS sites in Americas (Sarnia, Canada, Zwijndrecht, Belgium), Europe (LANXESS, Exxon), Russia (Nizhnekamsk, Exxon, Sibur), Japan (Exxon, JSR, Sinopec), China (Sinopec), Singapore (LANXESS)." /></td>
<td><img src="" alt="Comparison by nameplate capacities: Exxon, LANXESS, Nizhnekamskneftekhim, Sibur, Sinopec." /></td>
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</tbody>
</table>

Source: LANXESS market intelligence based CMAI, SRI; not to scale
Butyl Rubber is a core business within LANXESS

<table>
<thead>
<tr>
<th>Technology and process focus</th>
<th>Customer focus</th>
<th>Future focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secured raw material supply</td>
<td>• THE reliable long-term supplier</td>
<td>• R&amp;D pipeline for tire &amp; non-tire</td>
</tr>
<tr>
<td>• Cost efficiency due to world-scale plants</td>
<td>• Close cooperation with customers to meet specific needs</td>
<td>• Steadily investing in the future (Singapore, Antwerp expansion)</td>
</tr>
<tr>
<td>• Integrated approach for product and application development</td>
<td>• Only supplier of regulatory-approved food grade butyl rubber</td>
<td>• Long-term strategic orientation and market intelligence</td>
</tr>
<tr>
<td></td>
<td>• Technical experts worldwide</td>
<td>• Investing in biological raw material sources (Gevo)</td>
</tr>
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</table>

Securing and leveraging LANXESS leading market position

Step towards securing alternative raw material supply

Production process Gevo

- Development of a fermentation process to produce isobutanol organically (sugars in biomass)
- Intention to use technical know-how to produce isobutene by dehydrating isobutanol
- Cooperation to broaden future supply options against the background of volatile raw material prices
- Investment underpins LANXESS commitment to ‘Green Chemistry’

* Mechanic, chemical und enzymatic; ** DDGS – Distillers Dried Grains with Solubles
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Butyl Rubber: growing markets with good demand, especially in emerging countries

**Market development**

- Overall long-term (2011-2015) CAGR:
  - APAC: ~5%
  - EMEA: ~2%
  - Americas: ~2.5%

* LANXESS market intelligence 2010
Great untapped potential from growing middle class in Asia

**Growth driving megatrends**
- Mobility:
  - Growing middle-class in emerging countries
  - Increasing global trend for radial truck and bus tires
- Urbanization:
  - Growing requirements for high-quality medical packaging

**Growing middle-class in emerging countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>People entering middle class* (m people)</th>
</tr>
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<tbody>
<tr>
<td>Brazil</td>
<td>~800 m people</td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
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<tr>
<td>BRIC</td>
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</tbody>
</table>

Source: Goldman Sachs Global Economics Group, “Is this the BRICs decade?”, 2010; Michelin estimates
* Population with income >$6,000 and <$30,000/capita in BRIC countries

**Improvement of road infrastructure and radialization stimulate global trend for radial truck and bus tires**

**BRIC countries with tremendous growth potential**

Radialization rate for truck and bus tires 2009 [%]

- Radialization as an indicator for rising use of tubeless tires made of halobutyl
- China’s radialization rate expected to grow by ~16%* (CAGR 1995-2013)
- India with highest growth potential due to only 10%-12% radialization rate for truck tires

Source: Michelin Factbook 2009, LANXESS market intelligence; www.bekaert.com, LANXESS market intelligence

Improvement of road infrastructure and radialization stimulate global trend for radial truck and bus tires
Significant growth potential from Asian truck and bus tire market

- Global truck tire markets:
  - 17% OEM, 83% replacement
  - Asia represents 62% of world truck tire production*
- Strong increase in demand for halobutyl rubber in truck tires due to:
  - substitution (radialization trend in Asia)
  - globally increasing road transportation combined with high replacement proportion

High market potential in Asian truck tire market

Tire producers are reacting swiftly

**Bridgestone**
- New plant in China: €230 m investment, ~4.0 m tires/year
- China: ~1.3 m tires/year
- India: ~3.6 m tires/year

**Continental**
- New plant in China: €185 m investment, ~4.0 m tires/year

**Toyo Tires**
- New plant in China: €72 m investment, ~2.0 m tires/year

**Sumitomo Rubber Group**
- New plant in China: €230 m investment, ~10.8 m tires/year
- Russia: ~4.2 m tires/year
- Romania: expanding capacity by 60%
- China: doubling car tire capacity, truck tire capacity +20%
- LatAm: car tire capacity +20%, truck tire capacity +25%

**Michelin**
- New plants in China and India: €1,300 m investment
- New plant in Brazil: €300 m investment
- Increase capacity in Russia: 2.0 m tires/year

**Goodyear**
- Investments in China and Brazil

**Yokohama**
- New plant in China: ~€52 m investment, ~2.1 m tires/year
- New plant in Hungary: ~10.0 m tires/year

Note: Non-halobutyl part of innerliner contains: Processing aids, catalysts and additives; * LMC 2010

Source: Companies' websites
High-quality non-tire applications with long-term growth rates

**Medical devices**
- Butyl as first choice material due to high impermeability to gases and liquids
- Growth drivers:
  - Increasing requirements for modern, high-quality medical packaging in emerging countries
  - Use of butyl mandatory in China
  - Growing and aging population with improved access to modern medical treatment

**Adhesives and technical sealants**
- Butyl is the product of choice due to excellent sealing properties, permanent elasticity
- Growth drivers:
  - Energy-efficient insulations (e.g., window sealing)
  - High-end sealants in modern automobile industry (e.g., batteries, fuel cells)
  - Improved access to industrial food packaging

Debottlenecking in Antwerp necessary to bridge the gap until Singapore-capacity becomes available

**Supply and demand for butyl rubber**
- Butyl rubber as product of choice in several high-end applications leads to a tight supply
- Nameplate capacities include:
  - LXS plus 14 kt (Antwerp)
  - LXS plus 100 kt (Singapore)
  - LXS business plan considers multiple world scale capacities which come on stream stepwise 2013-2020

Source: LANXESS market intelligence
Butyl rubber in treads – Enhancing the dynamic properties

Traction properties significantly improved

- Improved wet and dry traction performance
- Similar rolling resistance and tread durability

Center of excellence for material research

- Located in the research park Ontario, Canada
- Direct access to innovation capabilities in research park and at University of Western Ontario
- Cross-functional team of scientists and engineers for butyl polymer research

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LANXESS – The only company continuously investing since 2006 in the profitably growing global butyl business

- LANXESS with already three strategic debottlenecking processes since 2006
- All capacity increases essential to meet strong customers’ demand
- All new capacities have been absorbed by the market
- LANXESS has been sold out of butyl rubber in the last years
- Even in the crisis, demand for butyl rubber rebounded again as of Q3 2009

LANXESS €400 m investment in the first new BTR production facility in Asia underpins leading position

**Timeline new plant in Singapore**

- **2010**
  - Debottlenecking Antwerp by 14kt will be completed
  - Start up of new world scale production in Singapore
- **2011**
- **2012**
- **2013**
New plant with best-in-class technology

- Favorable technology due to implementation of streamlined processes
- Lowering the plant's overall energy consumption utilizing optimized equipment and state-of-the-art exhaust gas treatment systems

Developing the next generation of butyl technology
- Breakthrough resulting in an entirely new production process with highly efficient resource utilization

Co-Monomers:
- Isobutene
- Isoprene

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<th>Raw materials</th>
<th>Process</th>
<th>Product</th>
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<td>Co-Monomers: Isobutene Isoprene</td>
<td>Polymerization</td>
<td>Regular Butyl Rubber</td>
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<td>Halogenation + Chlorine or Bromine</td>
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<td>Halobutyl Rubber</td>
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BU BTR: value creating investments in a premium business

Markets grow – LANXESS prepared to serve

Technical leadership will be strengthened

Largest global butyl investment since 1984

Investments strengthen segment and total LANXESS profitability

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