Resource Efficiency overview
Segment structure

**Resource Efficiency**
Sales: €3,131 m
Adj. EBITDA / margin: €663 m / 21.2%¹

**Inorganic Materials**
Sales: €1,473 m

- **Silica** (~65%)
- **Functional Silanes** (~15%)
- **Advanced Silanes** (~10%)
- **Catalysts** (~10%)

**Coatings & Additives**
Sales: €1,658 m

- **Crosslinkers** (~30%)
- **Oil Additives** (~30%)
- **Coatings & Adhesive Resins** (~30%)
- **Coating Additives** (~10%)
# Resource Efficiency overview

Demand driven by environmental megatrends

<table>
<thead>
<tr>
<th>Megatrend and impact</th>
<th>Scarcity of natural resources</th>
<th>Improvement of production efficiency</th>
<th>Increase in global energy consumption</th>
<th>Environmental sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precipitated Silica for Green Tires</td>
<td>Isophorone Chemicals for Composites</td>
<td>Viscosity modifiers for energy efficient solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>~4% (global light vehicle tires)</td>
<td>e.g. catalysts: 4-5% (global)</td>
<td>e.g. hydraulic fluids: 2% (global)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>~19% (“Green Tires”)</td>
<td>e.g. composites: 9% (global) 6% (China)</td>
<td>7% (China)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 2012-2020E; as per Frost & Sullivan (2013)
Business spotlight: Silica
Efficient integrated production platform for silica and silanes

Key advantages

- Superior process technology due to integrated silica-silane production platform
- Global footprint close to key customers
- Strong R&D and application technology driving innovation

Evonik integrated production set up

<table>
<thead>
<tr>
<th>Base raw materials</th>
<th>Intermediate raw materials</th>
<th>Marketed products</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>Waterglass</td>
<td>Precipitated silica</td>
<td>Precipitated silica</td>
</tr>
<tr>
<td></td>
<td>Silicon</td>
<td>Fumed silica</td>
<td>Fumed silica</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Organo-, Rubber- &amp; Chloro-) Silanes</td>
<td>(Organo-, Rubber- &amp; Chloro-) Silanes</td>
</tr>
</tbody>
</table>

= purchased raw materials

Precipitation process

Pyrogenic process
Business spotlight: Silica
Leading market positions with strong established brands in growth markets

Precipitated Silica

- Evonik #1

Main competitors
- Solvay
- JM Huber
- PPG
- OSC

Fumed Silica

- Evonik #1

Main competitors
- Cabot
- Wacker
- Tokuyama

Diverse end market split in strongly growing end markets

<table>
<thead>
<tr>
<th>Expected Market Growth 2012-2020</th>
<th>Sales split by end market (2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global light vehicle tires ~ 4%¹</td>
<td>Automotive 24%</td>
</tr>
<tr>
<td>Low rolling resistance tires ~19%¹</td>
<td>Electronics 4%</td>
</tr>
<tr>
<td>Lead acid batteries (automotive, e-bike, UPS) ~ 5%²</td>
<td>Home 18%</td>
</tr>
<tr>
<td>Coating; Paints &amp; Coatings ~ 5%¹</td>
<td>Food &amp; Beverages 3%</td>
</tr>
<tr>
<td>Plastics &amp; Rubber ~ 5%¹</td>
<td>Other 29%</td>
</tr>
</tbody>
</table>

¹ 2012-2020E; as per Frost & Sullivan (2013)
² 2012-2020E; as per company estimate
**Green tire uses more silica**

- Major components of green tires: rubber, carbon black and silica-silane reinforcing system
- Low rolling resistance tires contain more silica than carbon black in the tread compound
- Delivering high value added for tire manufacturers with small total cost share
- Additional demand driver: tire labeling requirements
- Close relationships with major global tire manufacturers:

**Strong demand trend**

<table>
<thead>
<tr>
<th>Tire sales (m units sold)²</th>
<th>Share of green tire²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,224</td>
<td>1,271</td>
</tr>
</tbody>
</table>

**Total silica volume used in tire industry³**

<table>
<thead>
<tr>
<th>2011A</th>
<th>2012A</th>
<th>2016E</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>20%</td>
<td>31%</td>
</tr>
</tbody>
</table>

**Share of silica in the tire industry for green tires¹**

<table>
<thead>
<tr>
<th>2011A</th>
<th>2012A</th>
<th>2016E</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5% CAGR</td>
<td>25% CAGR</td>
<td>31%</td>
</tr>
</tbody>
</table>

¹ Company estimate
² As per Frost and Sullivan (03/2013) and company estimates
³ Green tire related silica volume as per Frost and Sullivan (2013). Other silica volume as per company estimate.

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Business spotlight: Silica
Precipitated silica – Global reach

Global production setup

- Global production and distribution network supports high customer intimacy
- Long-term partnerships with key customers

Planned capacity expansions

- Intention to increase global capacity by ~30% by 2014 across all major regions and close to growth markets
- Capacity expansions already partly implemented (Germany, China, Spain, Taiwan, Turkey)
- Silica master plan supports #1 position globally
Global expansion of silica production

- Worldwide expansion of capacities for precipitated silica of about 30 percent planned for the period between 2010 and 2014 and already partly implemented
- Total investment: one hundred million euro range
- Increased growth expected worldwide through the trend in fuel-efficient low-rolling-resistance

Expansion of US production

- Strategic rationale: Further strengthening position of Evonik in the US market
- Investment: Lower double-digit million Euros range in new facility in Chester, Pennsylvania, USA
- Capacity expansion: 20 kt p.a.

Expansion Asia

- Strategic rationale: Satisfy demand in China and Southeast Asia driven by trend toward fuel-saving tires and life science applications
- Investment: Lower double-digit million euro range
- Completion: 2013 (China) and 2014 (Thailand)

New Silica plant in Brazil

- Investment: Middle double-digit million-euro range
- Status: Ongoing basic engineering
- Completion: Scheduled for the end of 2015 subject to board approval
## Business spotlight: Catalysts

Positioning in attractive markets with technological expertise gained from captive use applications

<table>
<thead>
<tr>
<th>Catalysts</th>
<th>Business model</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Catalysts are present in approximately 90% of the world’s chemical reactions.</td>
<td>• Focused proprietary catalyst portfolio</td>
</tr>
<tr>
<td>• Evonik products enable and continuously improve production efficiency.</td>
<td>• Comprehensive service portfolio ranging from joint development to custom / toll manufacturing</td>
</tr>
</tbody>
</table>

### Comprehensive service portfolio

- Collaboration with customers at various stages from lab-scale to commercialization
- Full precious metal life cycle management handling in all regions
- Technical customer service for sampling, selected catalysts testing, start-up, change out, diagnostics
- High throughput preparation (HTP) and screening (HTS) services
### End markets for catalysts

<table>
<thead>
<tr>
<th>Application examples</th>
<th>Advantages in process</th>
<th>End market growth¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industrial &amp; Petrochemicals</strong>&lt;br&gt;(Image)</td>
<td>– Specialty catalysts for external customers and captive use (e.g. HPPO-process, Aveneer®) with extensive catalyst manufacturing competence</td>
<td>~4-5%</td>
</tr>
<tr>
<td><strong>Life Science &amp; Fine Chemicals</strong>&lt;br&gt;(Image)</td>
<td>– Tailored catalysts for selective hydrogenation for fine chemicals, pharmaceutical and agrochemical applications</td>
<td>~4-5%</td>
</tr>
<tr>
<td><strong>Polyolefins</strong>&lt;br&gt;(Image)</td>
<td>– Components for high-performance olefin polymerization catalysts</td>
<td>~5%</td>
</tr>
</tbody>
</table>

¹ 2012-2020E; as per Frost & Sullivan (2013)
Business spotlight: Crosslinkers
Positioning in attractive growth markets

Crosslinkers – Characteristics and advantages

- Only fully integrated player in Isophorone chemistry
- Extensive application know-how for various industries
- Leading cost position and technology leadership from innovation
- Focus on diamines for epoxy-curing in coatings, flooring and high performance composites
- Isophorone chemistry with solid market growth\(^1\):

\[
\begin{array}{c|c}
2012 & 2020 \\
\hline
200 \text{ kt} & 300 \text{ kt} \\
\hline
\end{array}
\]

\[\text{5\% CAGR}\]

Application examples & product characteristics

- **Lightweight**
  - Composites for light-weight construction

- **Coatings**
  - Next generation scratch resistant coating technology for premium applications

- **Construction**
  - Raw materials for high performance industrial floorings for high-tech applications

Chinese investment project progressed

- First integrated mover into high-growth Chinese market
- World-scale integrated IP/IPD plant
- Start up expected in early 2014

\[\rightarrow\text{ Only player with global production setup (Europe, Americas, Asia)}\]

\(^1\) Company estimates

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Business spotlight: Oil Additives
Integrated supply chain with high customer intimacy and OEM reputation

Integrated supply chain with downstream relationships

• Customers: Performance Packages and Blenders
• Technical support for customers, own R&D and product development capabilities
• Downstream OEM and end-user relationships and reputation

• Leading global supplier of high performance lubricant and fuel additive in automotive and industrial lubricants market
• Integrated global supply chain and production network
• Superior customized product technology
Business spotlight: Oil Additives
First choice technology for efficiency improvement in lubricants, fuel & petro industries

Application examples

| Automotive | Gear and transmission oil  
|            | Engine oil  
|            | Biodiesel  
| Construction | Hydraulic fluids  
| Industry & refining | Industrial gear oils  
|                  | Dewaxing aids  
|                  | Crude oil flow improver  

Customer benefits

High-performance components in lubricants

- Flowing over a wide temperature range without solidifying

- Fuel saving and efficiency
- Productivity and power
- Component durability
- Reduction of CO2 Emissions
Business spotlight: Oil Additives
Significant capacity expansion in Singapore

<table>
<thead>
<tr>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricant Additives Market growth</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>+1,7%</td>
</tr>
<tr>
<td>+ 5%</td>
</tr>
</tbody>
</table>

- Resource Efficiency is growth driver for industrial lubricant applications (Injection molding; Wind turbine gear oils; Drilling)
- Entering new markets e.g. Metal Working Fluids
- Novel polymer architectures (comb polymers) offer significant improved fuel economy in transmission, gear and engine oils

<table>
<thead>
<tr>
<th>Strategic investment in Singapore under way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Lubricant Additives Market growth 2012 – 2017</td>
</tr>
<tr>
<td>Global</td>
</tr>
<tr>
<td>NAFTA</td>
</tr>
<tr>
<td>EU</td>
</tr>
<tr>
<td>Asia</td>
</tr>
</tbody>
</table>

Capacity Expansion in Singapore:
- Asian market growth driven by expanding mobility and increasing demand for high-performance lubricants
- Debottlenecking and the planned expansion will nearly double capacity
- Plant expansion to be completed in 2015
Business spotlight: Coating Additives
Differentiation from technological expertise and innovation

**Our business**

- Development, production, and marketing of innovative high performance additives and specialty resins for the coatings and printing inks industry
- Supporting customers to develop resource efficient products
- Intensive tech service & sales force support
- Highly attractive low volume business with wide product range
- Market driven development of coating additives

**Product examples**

- Focus on mission-critical and performance-impacting Coating Additives e.g.:
  
  With/without Evonik additive

**Growth strategy**

- Develop innovative products for environmentally friendly coatings
- Increase market share in Asia and North America
- New R&D labs in Singapore, Shanghai and Essen operating
- Investments in global silicone production capacity (China/Essen)
- Selected complementary acquisitions
Resource Efficiency

Highlights

Leading global positions with high customer intimacy

• Global market leadership in almost all fields of business with strong established brands
• Global supply of solutions with collaboration in R&D enables high customer intimacy

Strong growth profile due to megatrends and innovations

• Megatrend Resource Efficiency drives strong growth of this segment
• Strong innovation pipeline with focus on key technologies

Focused investment program

• Silica master plan
• 5th isophorone production line
• Liquid polybutadiene for adhesives and sealants
• Expansion Oil Additives Singapore
## Particle design competence

### Superior particle design competence with focus on

**Precipitated Silica:**
- Close customer relationships, esp. with tire manufacturers
- Broad range of end markets with strong established brands
- Ongoing global expansion program

**Fumed Silica:**
- Strong process technology
- Growing range of applications
- Strong established brands

## Superior Silica properties

- Reinforcement, e.g. in Tire & Mechanical Rubber Goods
- Free flow and rheology control, e.g. in food & beverages, pharmaceutical and personal care applications
- Matting, e.g. in coating solutions
- Defoaming, e.g. in food & beverages
- Abrasion, e.g. in chemical mechanical planarization of semiconductors (CMP)
Business spotlight: Crosslinkers
Only fully integrated player with clear leadership along value chain

<table>
<thead>
<tr>
<th>Applications</th>
<th>Isophorone (IP)</th>
<th>Isophorone diamine (IPD)</th>
<th>Isophorone diisocyanate (IPDI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating &amp; printing ink solvents</td>
<td>Flooring</td>
<td>TPU</td>
<td>Automotive interior trim</td>
</tr>
<tr>
<td>Chemical synthesis</td>
<td>Composites</td>
<td>PUD</td>
<td></td>
</tr>
</tbody>
</table>

| Market growth 2012-20 | ~ 5% | ~ 4% | ~ 5% | ~ 9% | ~ 9% | ~ 4% | ~ 5% |

| Key players | Arkema | BASF | Bayer | Perstorp |

| Evonik market position¹ | #1 | #1 | #1 |

With 50 years of experience, Crosslinkers is an important supplier of raw materials in the area of high-performance specialty polymers and occupies a leading position in raw materials and crosslinkers for coating technology

¹ As per company estimate, based on multiple research reports.

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### Resource Efficiency overview
Profitability continuously improved

#### Sales (€ m)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>3,828</td>
<td>3,181</td>
<td>1,197</td>
<td>812</td>
<td>3,131</td>
</tr>
<tr>
<td>Inorganic Materials</td>
<td>1,477</td>
<td>855</td>
<td>1,616</td>
<td>1,747</td>
<td>1,473</td>
</tr>
<tr>
<td>Coatings &amp; Additives</td>
<td>1,157</td>
<td>1,070</td>
<td>1,382</td>
<td>1,486</td>
<td>1,658</td>
</tr>
</tbody>
</table>

**CAGR +4%**

#### Adj. EBITDA and margin (%)\(^1\)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Black</td>
<td>558</td>
<td>463</td>
<td>746</td>
<td>765</td>
<td>663</td>
</tr>
</tbody>
</table>

**CAGR +8%**

#### Resource Efficiency overview

- Historical figures significantly impacted by divestment of Carbon Black activities
- Expected future growth GDP+
- Independence from raw material price volatility
- Low price sensitivity of customers due to mission critical inputs with low share in total cost

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\(^1\) Adjusted EBITDA 2012 restated for IAS 19 effects

\(^2\) Excl. Carbon Black

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Resource Efficiency overview
Well balanced portfolio serving wide range of markets

Sales split by Evonik’s end markets (2012)¹

- Broad range of end markets with solid growth
- Strong focus on resource efficiency applications
- Mission critical components

Sales split by region (2012)

- True global footprint
- Strong presence in Asia-Pacific and NAFTA
- Ongoing and planned expansion of production base with focus on Asia and emerging markets

¹ Company estimates on the basis of information on Evonik’s customers and the further use of Evonik’s products by its customers

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Resource Efficiency overview
Leading market positions across the portfolio

<table>
<thead>
<tr>
<th>Key Business Lines</th>
<th>Silica</th>
<th>Catalysts</th>
<th>Crosslinkers</th>
<th>Oil Additives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example products and applications</td>
<td>Precipitated silica for “Green Tires”</td>
<td>Catalysts for fine chemicals and polyolefins</td>
<td>Crosslinker for composites, elastomers and non-solvent coatings</td>
<td>Lubricant additives (viscosity modifiers) for hydraulic systems</td>
</tr>
<tr>
<td>Evonik product position¹</td>
<td>#1 in precipitated silica</td>
<td>#1 for precious metal powder catalysts</td>
<td>#1 in isophorone chemicals</td>
<td>#1 in oil additives</td>
</tr>
<tr>
<td></td>
<td>#1 in fumed silica</td>
<td>#2 for activated base metal catalysts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of sales from leading market positions²</td>
<td>100%</td>
<td>80%</td>
<td>85%</td>
<td>100%</td>
</tr>
</tbody>
</table>

¹ Company estimates, based on multiple research reports
² Defined as top 1-3 positions; as per company estimates, based on multiple research reports
## Resource Efficiency overview

### Inorganic Materials

<table>
<thead>
<tr>
<th>Silica</th>
<th>Advanced Silanes</th>
<th>Functional Silanes</th>
<th>Catalysts</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Silica image]</td>
<td>![Advanced Silanes image]</td>
<td>![Functional Silanes image]</td>
<td>![Catalysts image]</td>
</tr>
</tbody>
</table>

### Applications
- Silicone rubber
- Green tires & rubber
- Paints & coatings
- Adhesives & sealants
- Optical fibres
- Semi conductors / electronics
- Fumed silica
- Adhesive & sealants
- Green tires
- Wire & cable
- Building protection
- Catalysts for fine chemicals and polyolefins
- Enabler for process innovation

### Key products
- Matting agents
- Precipitated silica
- Fumed silica
- Chlorosilanes
- Monosilanes
- Organofunctional silanes
- Rubber silanes
- Precious metal catalysts

### Sales split 2012
- Silica: ~65%
- Advanced Silanes: ~10%
- Functional Silanes: ~15%
- Catalysts: ~10%

### Market position
1. #1 in precipitated silica
2. #1 in chlorosilanes
3. #1 in organosilanes

### % of sales from leading positions
- Silica: 100%
- Advanced Silanes: 99%
- Functional Silanes: 100%
- Catalysts: 80%

### Main competitors
- Silica: Cabot, JM Huber, Solvay, WR Grace
- Advanced Silanes: OCI, REC
- Functional Silanes: Dow Corning, Momentive, Shin Etsu
- Catalysts: BASF, Clariant, Johnson Matthey, WR Grace

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1 Company estimates for relevant markets based on multiple research reports
2 Defined as Top 1-3 positions; as per Company estimates, based on multiple research reports
### Resource Efficiency overview

**Coatings & Additives**

<table>
<thead>
<tr>
<th>Applications</th>
<th>Crosslinkers</th>
<th>Oil Additives</th>
<th>Coating Additives</th>
<th>Coating &amp; Adhesive Resins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composites</td>
<td>• Composites</td>
<td>• Auto &amp; industrials</td>
<td>• Eco-friendly coatings (low VOC, water based)</td>
<td>• Hot melt</td>
</tr>
<tr>
<td>Coatings &amp; paints</td>
<td>• Coatings &amp; paints</td>
<td>• Hydraulic systems</td>
<td>• High solid industrial coatings</td>
<td>• Pre coated metal</td>
</tr>
<tr>
<td>Flooring</td>
<td>• Flooring</td>
<td>• Refinery processing</td>
<td></td>
<td>• Protective coatings</td>
</tr>
<tr>
<td>Automotive interior</td>
<td>• Automotive interior</td>
<td>• Biofuels</td>
<td></td>
<td>• Road marking</td>
</tr>
<tr>
<td><strong>Key products</strong></td>
<td>• Crosslinkers for composites, elastomers and non-solvent coatings</td>
<td>• Lubricant additives (viscosity modifiers)</td>
<td>• Additives for eco-friendly and highly solid industrial coatings</td>
<td>• Functional resins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fuel additives</td>
<td></td>
<td>• Adhesive hot melts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Heat sealents</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Polybutadiene</td>
</tr>
<tr>
<td><strong>Sales split 2012</strong></td>
<td>~30%</td>
<td>~30%</td>
<td>~10%</td>
<td>~30%</td>
</tr>
<tr>
<td><strong>Market position¹</strong></td>
<td># 1 in isophorone chemicals</td>
<td># 1 oil additives</td>
<td># 1 in organically modified silicones</td>
<td># 1 in polyester resins</td>
</tr>
<tr>
<td><strong>% of sales from leading positions²</strong></td>
<td><img src="image" alt="85%" /></td>
<td><img src="image" alt="100%" /></td>
<td><img src="image" alt="98%" /></td>
<td><img src="image" alt="80%" /></td>
</tr>
<tr>
<td><strong>Main competitors</strong></td>
<td>• Arkema</td>
<td>• Infineum</td>
<td>• Air Products</td>
<td>• Dow</td>
</tr>
<tr>
<td></td>
<td>• BASF</td>
<td>• Lubrizol</td>
<td>• Altana</td>
<td>• DSM</td>
</tr>
<tr>
<td></td>
<td>• Bayer</td>
<td>• NewMarket</td>
<td>• Dow Corning</td>
<td>• Mitsubishi Chemical</td>
</tr>
</tbody>
</table>

¹ Company estimates for relevant markets based on multiple research reports
² Defined as Top 1-3 positions; as per Company estimates, based on multiple research reports

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