Evonik Venture Capital & Corporate Innovation North America

August 2017
Eric Breese, George Mandarakas
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2. Evonik Venture Capital
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4. Specialty Chemical segments
2016: Evonik in figures

Employees December 31, 2016
34,351

17.0 %
Profitability (adjusted EBITDA margin)

€2.165 billion
Adjusted EBITDA

Return on capital Employed (ROCE)

14.0 %

€12.7 billion
sales
Leading in Specialty Chemicals

<table>
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<th>Market leader</th>
<th>Customer proximity</th>
<th>Value proposition</th>
<th>Innovation power</th>
<th>Growth profile</th>
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<tbody>
<tr>
<td>Leading market positions in 80% of our businesses&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Strong customer intimacy and tailor-made solutions with almost 90% of direct sales</td>
<td>Most products with small volume but big impact in customers’ end products</td>
<td>~500 R&amp;D projects driving future sales potential</td>
<td>Average volume growth from 2010 until 2015 more than 4% in our growth segments&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

1. Sales with top 1-3 market position by sales, production volume or capacity (depending on available data)  | 2. Nutrition & Care and Resource Efficiency
Three segments with differentiated management

Sales
€12,732 m

Adj. EBITDA
€2,165 m

Margin
17.0%

ROCE
14.0%

Growth
Nutrition & Care

Sales
€4,316 m

Adj. EBITDA / Margin
€1,006 m / 23.3%

Resource Efficiency

Sales
€4,473 m

Adj. EBITDA / Margin
€977 m / 21.8%

Efficiency
Performance Materials

Sales
€3,245 m

Adj. EBITDA / Margin
€371 m / 11.4%
Evonik Group
22 Business Lines grouped in 3 segments

Resource Efficiency
Sales
€4,473 m
Adj. EBITDA / Margin
€977 m / 21.8%

Nutrition & Care
Sales
€4,316 m
Adj. EBITDA / Margin
€1,006 m / 23.3%

Performance Materials
Sales
€3,145 m
Adj. EBITDA / Margin
€371 m / 11.4%

Silica
Crosslinkers
Oil Additives
Coating & Adhesive Resins
High Performance Polymers
Active Oxygens
Silanes
Coating Additives
Catalysts

Animal Nutrition
Baby Care
Health Care
Personal Care
Household Care
Comfort & Insulation
Interface & Performance

Performance Intermediates
Methacrylates
Acrylic Products
Functional Solutions
Agrochemicals & Polymer Additives
CyPlus Technologies

2016 financials; Business Lines ranked by turnover
Growth strategy based on three strong pillars

**Investments**
- Expansion of global production footprint
  - Strengthen leading market positions worldwide

7 world-scale production plants erected and currently in ramp-up

**Innovation**
- Market- and customer-oriented R&D approach
  - Product and process innovation

~2,700 R&D employees drive our innovation efforts across the group

**M&A**
- Sharpening of specialty chemicals portfolio
  - Additional route for growth and value creation

- Acquisition of Specialty Additives business of Air Products
- Acquisition of Huber Silica

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1. Construction between 2012 and 2016
2. August 2017 | Evonik Venture Capital & Corporate Innovation North America
Innovation excellence: Evonik growth fields
Leveraging our core competencies into highly attractive markets

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<tr>
<th>Megatrends</th>
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<tr>
<td>Health &amp; Nutrition</td>
<td>Resource Efficiency</td>
<td>Globalization</td>
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<table>
<thead>
<tr>
<th>Evonik Growth Fields</th>
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<tbody>
<tr>
<td>Sustainable Nutrition</td>
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<tr>
<td>Advanced Food Ingredients</td>
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<tr>
<td>Healthcare Solutions</td>
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<tr>
<td>Cosmetic Solutions</td>
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<td>Membranes</td>
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<td>Smart Materials</td>
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<thead>
<tr>
<th>Evonik Technology Competence Fields</th>
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<td>Polymer Design</td>
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<td>Inorganic Particle Design</td>
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<tr>
<td>Interfacial Technologies</td>
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<tr>
<td>Coating &amp; Bonding Technologies</td>
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<tr>
<td>Catalytic Processes</td>
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<tr>
<td>Biotechnology</td>
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</table>

Additional contribution to sales

more than €1 billion by 2025

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Evonik Venture Capital
- the strategic investor advantage

- As a **strategic investor** we actively collaborate with our portfolio companies
- We leverage the strengths of Evonik to **drive growth** at portfolio companies through strategic, technical and commercial expertise:

- Cooperation with Evonik can provide:
  - **technological expertise** and infrastructure
  - know-how of **manufacturing processes** and **production scale-up**
  - **market experience** and global access
  - expertise in **patent strategies** and on issues of **intellectual property** rights
  - **reputation** and financial strength
Evonik Venture Capital
Involvement with NCET2

- **NCET2**
  - Significant number of early stage opportunities
  - Organized & efficient review process
  - Quality start-ups for deal flow
  - Regular interaction on tapping into University startup ecosystem

- **Evonik**
  - Corporate Selection Committee
  - Participation in Demo Day
  - Direct interaction with start-ups

- **Outcomes for Evonik**
  - Review many interesting technologies
  - Increased deal flow
  - A number of relationships developed or under development
### Evonik Venture Capital investment focus

#### Nutrition & Care
- Feed additives and services for animal nutrition
- Active pharma ingredients
- Drug delivery systems for oral and parenteral dosage
- Tailor-made pharmaceutical syntheses
- Pharma amino acids
- Actives, emulsifiers and conditioners for personal care applications
- Superabsorbents for baby care, female care and adult care
- Foam stabilizers, catalysts and release agents
- Specialty surfactants
- Release coatings and super spreading additives for packaging, agrochemicals and plastic additives

#### Resource Efficiency
- Lubricant additives (viscosity modifiers)
- Fuel additives
- Additives for eco-friendly and highly solid industrial coatings
- Crosslinkers for composites, elastomers and non-solvent coatings
- Functional resins
- Adhesive hot melts
- Heat sealants
- Precipitated and fumed silica
- High perf. polyamide (PA12)
- Polyetheretherketone (PEEK)
- Membranes and polyimide fibres
- Activated base metal catalysts
- Catalysts for industrial & petrochemicals

#### Performance Materials
- Plastics
- Styrene-butadiene-rubber
- High performance polymers
- LED/touch screens
- Construction
- Light-weight systems
- Automotive components
- Polymer additives
- Optical brighteners
- Agro chemicals
- Methylmethacrylate (MMA) & application monomers
- Methacrylic acid
Evonik Venture Capital – Access to start-up innovation
Providing an additional lever for innovation growth and business model disruption

Key facts
- Established in 2012
- Direct investment in 15 - 20 start-up companies; Participation in specialized venture capital funds
- Global investment strategy with focus on Europe, North America and Asia
- Maintains a minority share and typically invests up to € 5 million per company
- Investments are driven by strategic goals and financial returns

Investment history
- Funds: 2012 - 2016
- Start-ups: 2012 - 2016

Investment volume €100m
Direct investments in start-ups leverage Evonik’s external innovation and growth

<table>
<thead>
<tr>
<th>Preferential access to start-up company’s resources and technology</th>
<th>Insight in company’s market and technology</th>
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<tbody>
<tr>
<td>Foster entrepreneurial behavior in Evonik</td>
<td>Access to potential collaboration partners and M&amp;A opportunities</td>
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</table>
Evonik Venture Capital portfolio comprises 10 direct investments

- Beta-glucan as nutritional supplement for feed- and food applications
- Bio-based synthetic oils
- Non-halogen, poly-phosphonates – fire-resistant plastics
- Additives for lubricants, metal working fluids and coatings
- 3D printed, biomechanically optimized insoles
- Flexible composite pipes
- Bio-based nanocellulose for wound care and cosmetics
- Micro- and nano-optical structures for electronic applications
- Patient friendly solutions for correcting skeletal deformations
- Bio-absorbable closure device for large bore holes in the femoral artery
Selective fund investments play a critical role for the success of Evonik Venture Capital

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<th>Expansion</th>
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<td>Geographical expansion</td>
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<td>Insight in new technology fields</td>
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<th>Network</th>
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<tr>
<td>Regional access</td>
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<tr>
<td>Access to disruptive technologies &amp; markets</td>
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<td>M&amp;A options</td>
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<th>Deal Flow</th>
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<tr>
<td>Pre-evaluation of companies</td>
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<td>Expand activities into adjacent areas</td>
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<th>Financial return</th>
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<td>Proven track record necessary</td>
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<tr>
<td>Strategic value &amp; risk adjusted financial return</td>
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</table>
Fund investments enable global access to innovation

- Industry focus: e.g. advanced materials, renewable resources, energy efficiency
- Industry focus: Engineering, Life Science, Telecommunication
- Industry focus: Advanced materials in energy, electronics, health & sustainability
- Industry focus: Material focused green technology companies
- Industry focus: Private, food and agriculture companies in China
## Evonik Venture Capital investment team

### Main Office – Hanau, Germany
- **Bernhard Mohr**
  - Managing Director
- **Monika Braun**
  - Executive Assistant
- **Petra Riva**
  - Executive Assistant
- **Mona Friedrich**
  - Financial Analyst
- **Mark Redshaw**
  - Investment Director
- **Jakob Wirbatz**
  - Investment Director
- **Stephan Wolf**
  - Investment Manager

### Office – Essen, Germany
- **Lars Boehnisch**
  - Investment Manager
- **Jens Busse**
  - Investment Manager

### Office – Parsippany, NJ
- **Eric Breese**
  - Investment Manager
- **Kevin Norman**
  - Investment Manager
- **Lutz Stoeber**
  - Investment Director

[www.evonik.com/venturing](http://www.evonik.com/venturing)
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Corporate Innovation North America, 2017

Regional President North America

Chief Innovation Officer (CIO)

Innovation Management North America

Technology Scouting

Scientific Relations

Open Innovation
### CI North America Mission

- Continuously monitoring the innovation landscape & identifying targeted innovation opportunities for Evonik
- Actively seeking external technologies for adoption
- Developing & leveraging relations with external organizations to boost Evonik’s visibility in NA
- Promoting a culture of innovation & collaboration
- Pursuing strategic R&D activities in targeted areas
- Assessing the IP landscape & assisting Evonik in obtaining the best terms & conditions in IP agreements
- Investing in innovative ideas through corporate venturing
Identifying partners and technology providers

<table>
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<th>Universities</th>
<th>Access to new Technologies, Knowledge, Break Through Innovations, Basic Research Results Early Access to Students, Graduate Students, Phd´s</th>
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<tr>
<td>Research Institutes</td>
<td></td>
</tr>
<tr>
<td>Start-Up´s</td>
<td>R&amp;D-Cooperation, licensing, venturing and acquisition of ready to market technologies, products &amp; knowhow; access to new business &amp; markets</td>
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<tr>
<td>SME´s</td>
<td></td>
</tr>
<tr>
<td>Suppliers &amp; Other Chemical Companies</td>
<td>Joint R&amp;D cooperation in selected areas with complementary competencies &amp; knowhow, joint Cooperation with raw material suppliers</td>
</tr>
</tbody>
</table>

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Strong Interactions with University Community

Major Sites
- Nutrition & Care
- Resource Efficiency
- Performance Materials
- R&D
- Administrative Center
How we operate
Innovation activities span the entire value chain

- Sourcing
- Transport
- Contracts
- Partners
- Other petroleum-based raw materials
- Bio-based raw materials
- New chemistries
- New processes
- Energy efficiency
- Cost efficiency
- Multiple functionalities
- Enhanced Performance
- More durable
- Contracts
- Channels
- Pricing mechanisms
- Partnerships
- New geographical markets
- New customer segments
- Adjacencies
- Partnerships

Customers and suppliers are an integral part of Evonik’s innovation activities
Making an Impact

Design for a pilot facility completed for novel route to convert a waste stream to value added products.

Licensing agreement being negotiated for a novel active for the personal care market.

Evaluating basestock materials for industrial gear applications.

Joint Development Agreement with company for the conversion recycled PET into value added products.

Evonik Acquires Transferra Nanosciences

Evonik, a German creative industrial group focused on specialty chemicals, announced on June 28, 2016 that it has acquired Transferra Nanosciences, a biotechnology company based in Canada, for an undisclosed amount, the company said in a press announcement. According to Evonik, the transaction is scheduled to close at the end of July 2016. The acquisition allows Evonik to further expand the portfolio of its Business Line Health Care in the area of parenteral drug delivery technologies and services.

Transferra is a contract development and manufacturing organization (CDMO) that services biotechnology companies developing pharmaceutical products. Transferra services include prototype identification, scale-up and process development, analytical support and qualification of methods, production of test articles for toxicology studies, and cGMP manufacturing of clinical trial materials. Evonik Health Care is a provider of formulation development and GMP manufacturing services to the pharmaceutical industries for advanced parenteral drug depot formulations.
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# Nutrition & Care
## Business Line overview

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<th>Main Applications</th>
<th>Key products</th>
<th>Main Applications</th>
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<td><strong>Health Care</strong></td>
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<tr>
<td>Methionine</td>
<td>Feed additives and services for animal nutrition</td>
<td>Active pharma ingredients</td>
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<tr>
<td>Lysine, Threonine, Tryptophan</td>
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<td>Pharma grade amino acids</td>
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<td></td>
<td>Pharmaceutical coatings</td>
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<td>Drug delivery systems for oral and parenteral dosage</td>
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<td>Tailor-made pharmaceutical synthesis</td>
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<td></td>
<td></td>
<td>Pharma amino acids</td>
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<tr>
<td><strong>Baby Care</strong></td>
<td></td>
<td><strong>Comfort &amp; Insulation</strong></td>
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<td>Superabsorbers</td>
<td>Baby care</td>
<td>Foam stabilizers</td>
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<td>Female care</td>
<td>Catalysts</td>
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<td>Adult care</td>
<td>Release agents</td>
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<td><strong>Personal Care</strong></td>
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<td>Personal care</td>
<td>Release coatings</td>
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<td>Super spreading additives</td>
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<td><strong>Household Care</strong></td>
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<td>Fabric conditioners</td>
<td>Laundry care</td>
<td>Packaging / tapes</td>
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<td>Specialty surfactants</td>
<td>Home care</td>
<td>Agrochemicals</td>
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<td>Car care</td>
<td>Plastic additives</td>
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## Resource Efficiency
### Business Line overview

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<th>Key products</th>
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<th>Crosslinkers</th>
<th>Coating Additives</th>
<th>Active Oxygens</th>
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<tr>
<td></td>
<td>Precipitated silica</td>
<td>Lubricant additives (viscosity modifiers)</td>
<td>Crosslinkers for composites, elastomers and non-solvent coatings</td>
<td>Additives for eco-friendly and highly solid industrial coatings</td>
<td>Hydrogen peroxide</td>
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<td></td>
<td>Fumed silica</td>
<td>Fuel additives</td>
<td>Composites</td>
<td>Eco-friendly coatings (low VOC, water based)</td>
<td>Oxidizing agent in chemical reactions</td>
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<td>Special oxides</td>
<td>Auto &amp; industrials</td>
<td>Coatings &amp; paints</td>
<td>High solid industrial coatings</td>
<td>Pulp &amp; paper bleaching</td>
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<td>Silicone rubber</td>
<td>Hydraulic systems</td>
<td>Flooring</td>
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<td>Tires, green tires &amp; rubber</td>
<td>Refinery processing</td>
<td>Automotive interior</td>
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<td>Paints &amp; coatings</td>
<td>Biofuels</td>
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<td></td>
<td>Adhesives &amp; sealants</td>
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<th>Key products</th>
<th>Catalysts</th>
<th>High Performance Polymers</th>
<th>Coating &amp; Adhesive Resins</th>
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<td>Activated base material catalysts</td>
<td>High perf. polyamide</td>
<td>Functional resins</td>
<td>Chlorsilanes</td>
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<td>Precious metal catalysts</td>
<td>Polymetheretherketone</td>
<td>Adhesive hot melts</td>
<td>Organofunctional silanes</td>
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<tr>
<td></td>
<td>Catalysts for industrial &amp; petrochemicals</td>
<td>Membranes and Polyimide fibres</td>
<td>Heat sealants</td>
<td>Rubber silanes</td>
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<td></td>
<td>Silicone rubber</td>
<td>Automotive components</td>
<td>Polybutadiene</td>
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<td>Tires, green tires &amp; rubber</td>
<td>Medical</td>
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<td>Fumed silica</td>
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<td></td>
<td>Paints &amp; coatings</td>
<td>Oil &amp; gas pipes</td>
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<td>Optical fibres</td>
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<td></td>
<td>Adhesives &amp; sealants</td>
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<td>Adhesive &amp; sealants</td>
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<tr>
<th>Main Applications</th>
<th>Key products</th>
<th>Main Applications</th>
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<td>Silica</td>
<td>Precipitated silica</td>
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<td>Fumed silica</td>
<td>Medical</td>
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<td></td>
<td>Special oxides</td>
<td>Oil &amp; gas pipes</td>
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<td></td>
<td>Silicone rubber</td>
<td>Hot melt</td>
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<td></td>
<td>Tires, green tires &amp; rubber</td>
<td>Pre coated metal</td>
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<td>Paints &amp; coatings</td>
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<td>Adhesives &amp; sealants</td>
<td>Road marking</td>
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## Performance Materials
### Business Line overview

### Performance Intermediates
- Butadiene
- MTBE
- Butene-1
- Plasticizers (INA&DINP)

### Acrylic Polymers
- Molding compounds
- Acrylic sheets (Plexiglas / Acrylite)
- PMMA systems

### Acrylic Monomers
- Methylmethacrylate (MMA) & application monomers
- Methacrylic acid

### Acrylic Polymers
- Coatings
- PMMA
- Monomers for specialty applications

### Agrochemicals
- Triacetonamine
- Crosslinkers
- Precursors of glyphosates

### Functional Solutions
- Alkoxides (e.g. sodium methylate)
- Catalysts for biodiesel production

### CyPlus Technologies
- Sodium cyanide
- Potassium cyanide

### Key products
- Plasticizers (INA&DINP)
- Butadiene
- MTBE
- Butene-1

### Main Applications
- Plastics
- Styrene-Butadiene-Rubber
- High performance polymers

### Key products
- Precursors of glyphosates
- Crosslinkers

### Main Applications
- Polymer additives
- Optical brighteners
- Photovoltaic
- Agro chemicals

### Main Applications
- Optical brighteners
- Photovoltaic
- Agro chemicals

### Main Applications
- Precious metals mining
- Fine chemicals

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