Source: World Rubber Statistics 2016 - IISRP
Source: World Rubber Statistics 2016 - IISRP
Source: World Rubber Statistics 2016 - IISRP
BR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP

<table>
<thead>
<tr>
<th>Company</th>
<th>Capacity kt/yr</th>
<th>Idled date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fujian Fuxiang Chemical</td>
<td>50</td>
<td>Dec - 2013</td>
</tr>
<tr>
<td>Sinopec Baling Company</td>
<td>60</td>
<td>Dec - 2013</td>
</tr>
<tr>
<td>YPC – GPRO Rubber</td>
<td>100</td>
<td>Jan - 2014</td>
</tr>
<tr>
<td>PetroChina Jinzhou</td>
<td>50</td>
<td>Mar - 2014</td>
</tr>
<tr>
<td>Shandong Wanda Chemical</td>
<td>30</td>
<td>Apr - 2015</td>
</tr>
<tr>
<td>Shandong Huamao New Materials</td>
<td>100</td>
<td>Mar - 2015</td>
</tr>
<tr>
<td>Sinopec Shanghai Gaoqiao</td>
<td>120</td>
<td>Jun - 2016</td>
</tr>
</tbody>
</table>

Source: IISRP China
ESBR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP

SSBR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP
EPDM Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP

NBR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP
SBC's Global Capacity and Demand, kt

IR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP
IIR Global Capacity and Demand, kt

Source: World Rubber Statistics 2016 - IISRP
Overcapacity - confirmed facilities idled (China)
Demand - Slight recovery during 2016 - AP & EMEA
67% Operating rate - Improving

BR - Polybutadiene Rubber

GLOBAL HIGHLIGHTS

Global Supply & Demand

CHINA

ESBR - Styrene Butadiene Rubber (Emulsion)

HIGHLIGHTS

Global Supply & Demand

CHINA
### SSBR - Styrene Butadiene Rubber (Solution)

<table>
<thead>
<tr>
<th>Region</th>
<th>Supply</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAS</td>
<td>30%</td>
<td>26%</td>
</tr>
<tr>
<td>EMEA</td>
<td>26%</td>
<td>32%</td>
</tr>
<tr>
<td>ASIA PACIFIC</td>
<td>44%</td>
<td>42%</td>
</tr>
</tbody>
</table>

**HIGHLIGHTS**

- Overcapacity - Asia Pacific
- Demand: Improving in all regions
- 67% Operating rate - Improving

### EPDM - Ethylene-Propylene-Diene-Monomer

<table>
<thead>
<tr>
<th>Region</th>
<th>Supply</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAS</td>
<td>38%</td>
<td>28%</td>
</tr>
<tr>
<td>EMEA</td>
<td>24%</td>
<td>29%</td>
</tr>
<tr>
<td>ASIA PACIFIC</td>
<td>38%</td>
<td>44%</td>
</tr>
</tbody>
</table>

**HIGHLIGHTS**

- Overcapacity
- Demand: Improving - AP and EMEA
- 68% Operating rate

### GLOBAL SUPPLY & DEMAND

**CHINA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Supply</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CHINA**

- Exp
- Imp
- Production
- Demand

Source: IISRP Model
Source: IISRP China
Demand: Sluggish - Growth in AP
68% Operating rate

GLOBAL SUPPLY & DEMAND

Supply
Demand

NBR - Nitrile Butadiene Rubber

HIGHLIGHTS

AMERICAS EMEA ASIA PACIFIC

5% 17%
32% 27%
62% 56%

GLOBAL SUPPLY & DEMAND


Source: ISRPM Model

CHINA

Exp
Imp
Production
Demand

2016 2015 2014 2013

Source: ISRPM China

Demand: Improving in all regions
83% Operating rate

GLOBAL SUPPLY & DEMAND

SBS - Styrene Butadiene Block Copolymer

HIGHLIGHTS

AMERICAS EMEA ASIA PACIFIC

14% 20%
15% 22%
71% 58%

GLOBAL SUPPLY & DEMAND


Source: ISRPM Model

CHINA

Exp
Imp
Production
Demand

2016 2015 2014 2013

Source: ISRPM China
マーケットのリスク

- 信用リスク
- 市場リスク
- 流動性リスク
- 利率リスク

マーケットのリスクを理解し、適切な対策を講じることが必要です。
### China Operating Rates Deteriorate

<table>
<thead>
<tr>
<th>Product</th>
<th>2018 Utilization (%)</th>
<th>2019 Utilization (%)</th>
<th>2020 Utilization (%)</th>
<th>Trend of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTA</td>
<td>83.0</td>
<td>79.0</td>
<td>85.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>SBR</td>
<td>85.0</td>
<td>73.0</td>
<td>64.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>BR</td>
<td>62.0</td>
<td>52.0</td>
<td>48.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>MAP</td>
<td>85.0</td>
<td>67.0</td>
<td>65.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>UMA</td>
<td>85.0</td>
<td>83.0</td>
<td>81.5</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>Soda ash</td>
<td>83.0</td>
<td>77.0</td>
<td>81.4</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>DAP</td>
<td>79.0</td>
<td>79.0</td>
<td>79.2</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Calcium carbide</td>
<td>54.0</td>
<td>61.0</td>
<td>62.6</td>
<td>Improved slightly</td>
</tr>
<tr>
<td>PVC</td>
<td>56.0</td>
<td>62.0</td>
<td>68.0</td>
<td>Improved slightly</td>
</tr>
<tr>
<td>Methanol</td>
<td>60.0</td>
<td>60.0</td>
<td>62.0</td>
<td>Improved slightly</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>50.0/60.0</td>
<td>50.0/60.0</td>
<td>79.2</td>
<td>Improved slightly</td>
</tr>
<tr>
<td>Caustic soda</td>
<td>72.2</td>
<td>74.0</td>
<td>81.0</td>
<td>Improved</td>
</tr>
<tr>
<td>n-Butanol</td>
<td>81.0</td>
<td>71.0</td>
<td>72.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>2-Ethyl hexanol</td>
<td>73.0</td>
<td>77.0</td>
<td>78.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>Acrylic acid</td>
<td>81.0</td>
<td>83.0</td>
<td>66.0</td>
<td>Deteriorating</td>
</tr>
<tr>
<td>Butyl acrylate</td>
<td>92.0</td>
<td>82.0</td>
<td>66.0</td>
<td>Deteriorating</td>
</tr>
</tbody>
</table>


### SR Global Capacity, Supply & Demand

![SR Global Capacity, Supply & Demand Graph]

- **Capacity**, **Supply**, **Demand**

2016 (kton)
**PC: robust demand in mature markets and China**

**Passenger car tire market in 2016**
(% change YoY, in number of tires)

- **North America**
  - RMA pool: -1%
  - Non-RMA pool: +9%
  - Overall: +2%

- **Europe excluding Russia & CIS**
  - ETRMA pool: +4%
  - Non-ETRMA pool: +0%
  - Overall: +2%

- **Europe including Russia & CIS**
  - Overall: +3%

- **China**
  - Overall: +14%

- **Asia*** (excl. India)
  - Overall: +8%

- **South America**
  - Overall: +7%

- **Africa, India, Middle East**
  - Overall: +3%

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Source: Michelin

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**Tire market trends**

- **2016 compared to 2015**
  - China: +14%
  - Other regions: +2%

- **2015 compared to 2014**
  - China: +12%
  - Other regions: +2%

---

**Key points**

- **2016 market growth**
  - China: +14%
  - Other regions: +2%

- **2015 market growth**
  - China: +12%
  - Other regions: +2%

---

**Conclusion**

- **Market outlook**
  - China: +14%
  - Other regions: +2%
Global Light Vehicle Assembly Outlook

Source: PwC Autofacts 1Q 2017

Combined capital spending, R&D, and M&A of top 10 OEMs

Source: Capital IQ; company reports
You are invited to register for IISRP's “RECENT DEVELOPMENTS AND APPLICATIONS IN ELASTOMERS AND SYNTHETIC RUBBERS” webinar.

Presented by: Dr. Walter Ramirez
Chief Innovation Officer, Founder of Innventik

Please join us on Wednesday May 10, 2017 at 09:00 CST

In this webinar, you will gain insight on:
- Relevant technology activity, major drivers, and trends
- Sustainability: Renewable monomers and biobased solutions

Source: iisrp.com
Source: ISRP SR Consumption Forecast

*Includes BR, EPDM, ESBR, NBR, SBS & SSBR

- CAGR 2.5%