Booming Nylon Market in China

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December 2010

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Chapter One: Current Situation of Nylon 6 Market in China

Development of PA6 Chip Market in China from 2000 to 2010

- Total Capacity of PA Chips in China
- Capacity for Textile Yarn
- Capacity for Industrial Yarn & Cord Fabric Markets


Capacity: 0, 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000

*Estimated values
# New Capacities of Nylon 6 Chips in 2010

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
<th>Capacity (kt/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiangsu Ruimeifu</td>
<td>Danyang, Jiangsu</td>
<td>25</td>
</tr>
<tr>
<td>ChangAn Polymer</td>
<td>Wuxi, Jiangsu</td>
<td>40</td>
</tr>
<tr>
<td>Haiyang Chemical Fibers</td>
<td>Taizhou, Jiangsu</td>
<td>23</td>
</tr>
<tr>
<td>Shandong Anda</td>
<td>Leling, Jiangsu</td>
<td>25</td>
</tr>
<tr>
<td>Wenzhou Huajian</td>
<td>Wenzhou, Zhejiang</td>
<td>35</td>
</tr>
<tr>
<td>Tianjin Haijing</td>
<td>Tianjin</td>
<td>50</td>
</tr>
<tr>
<td>Qiangli Chemical Fiber</td>
<td>Jiangyin, Jiangsu</td>
<td>18</td>
</tr>
<tr>
<td>Shandong Shifeng</td>
<td>Gaotang, Shandong</td>
<td>30</td>
</tr>
<tr>
<td>Chemical Fiber Plant of Yueyang Petrochemical</td>
<td>Yueyang, Hunan</td>
<td>60</td>
</tr>
</tbody>
</table>

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# Nylon 6 Chip Production in China from 2000 to 2010

![Graph showing nylon 6 chip production in China from 2000 to 2010 with data points and labels for years and output.](image-url)
**Run Rates of Nylon 6 Chip Plants from 2000 to 2010**

- **Total Capacity**
- **Total Production**
- **Run Rate %**

**Applications of Domestic Nylon 6 Chips**

- Textile Yarn 53%
- Industrial Yarn 28%
- Fishing-net Monofilament 7%
- Nylon Staple Fiber 4%
- Engineering Plastics & Films 6%
Imp & Exp of Nylon 6 Chips from 2000 to 2010

Imp Vol  Exp Vol  Imp Dependence %

2000: 11.95  10.4  11.95
2001: 15.87 14.3  11.95
2002: 17.27 16.5  10.27
2003: 24.51 23.6  10.27
2004: 29.82 29.5  10.27
2005: 36.8  36.5  10.27
2006: 39.3  38.5  10.27
2007: 40.7  40.5  10.27
2008: 570  568  10.27
2009: 682  670  10.27
2010: 700  696  10.27

Anti-dumping Measures on Nylon 6 Chips in 2009

MoC: Announcement No. 80, 2009

USA-based Enterprises
1. BASF Corporation 30.4%
2. Honeywell Resins & Chemical LLC 36.2%
3. All Others 36.2%

EU-based Enterprises
1. Zaklady Azotowe w Tarnowie-Mościcach, S.A. 9.7%
2. BASF ANTWERPEN N.V. 8%
3. DOMO Caproleuna GmbH 8.2%
4. DSM Engineering Plastics B.V. 8.2%
5. All Others 23.9%

Russia-based Enterprises
1. "KuibyshevAzot" Joint Stock Company 5.9%
2. All Others 23.9%

Taiwan-based Enterprises
1. FORMOSA CHEMICALS & FIBER CORPORATION 4%
2. Li Peng Enterprise Co., Ltd. 4.3%
3. Zig Sheng Industrial Co., Ltd. 4.2%
4. Hualon Corporation 4.2%
5. China Petrochemical Development Corporation 4.2%
6. Tai-Ying Nylon Co., Ltd. 4.2%
7. Chain Yarn Co., Ltd. 4.2%
8. All Others 23.9%
### Origin of Nylon 6 Chip Imports into China 2009-2010

- **Taiwan**: 48%
- **USA**: 10%
- **Germany**: 6%
- **South Korea**: 10%
- **Russia**: 8%
- **Japan**: 3%
- **Thailand**: 4%
- **Malaysia**: 1%
- **Others**: 5%

### Applications of Imported Nylon 6 Chips 2010

- **Nylon**: 45%
- **Engineering Plastic & Films**: 55%

**Major Chinese Importers:**

- **Textile Yarn Territory**
  - Fujian Changle Liyuan Nylon Industry
  - Fujian Changle Creator Nylon Industrial
  - Fujian Quanzhou Tianyu Chemical Fiber Weaving Industry
  - Fujian Kaibang Polyamide Technology
  - Fujian Xiamen Donglun Group
  - Zhejiang Yiwu Huading Nylon
  - Zhejiang Xinlun Chemical Fiber
  - Zhejiang Jinhua Textile
  - Zhejiang Yuxin Chemical Fiber
  - Zhejiang Jinshida Chemical Fiber
  - Zhejiang Prufex nylon
  - Zhejiang Muhe Chemical Fiber
  - Zhejiang Samma Nylon Science and Technology
  - Hangzhou Yongchang Polyamide
  - China Resources Yanta Nylon
  - Shandong Qingdao Zhongda Chemical Fiber
  - Liboton International Trading
  - Nanjing Zhongnong Chemical Co.

- **Engineering Plastics Territory**
  - Lanxess Wuxi Chemical Company
  - DSM Engineering Plastic (Jiangsu)
  - Guangzhou Kingfa Science and Technology
  - Shanghai Kubelishezao Trading
  - DuPont China Holding
  - BASF Auxiliary Chemicals Co. (BACC)
Apparent Demand for Nylon 6 Chips in China 2000-2010

Terminal Markets of Nylon 6 Chips in China
Summary

- **Current Situation:**
  - Capacity and production of nylon chips has hit a record high and increased rapidly, leading to the first time for import dependence to decrease.

- **Opportunity:**
  - Policy Support from Anti-dumping Measures on Nylon Chips in 2009

- **Challenges:**
  - 1. Risks that Demand May Increase Less Rapidly in the Future
  - 2. Political Pressures from Anti-dumping Measures on CPL Imports in 2010
  - 3. Continuous Expansions of the Capacity of Nylon Chips

### Nylon 6 Spinning Capacity in China 2000-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (KT)</th>
<th>Production (KT)</th>
<th>Run Rates (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>78.3</td>
<td>88.2</td>
<td>78.3</td>
</tr>
<tr>
<td>2001</td>
<td>73.9</td>
<td></td>
<td>73.9</td>
</tr>
<tr>
<td>2002</td>
<td>76.4</td>
<td>88.2</td>
<td>76.4</td>
</tr>
<tr>
<td>2003</td>
<td>656</td>
<td>604</td>
<td>656</td>
</tr>
<tr>
<td>2004</td>
<td>604</td>
<td>58.9</td>
<td>604</td>
</tr>
<tr>
<td>2005</td>
<td>612</td>
<td>604</td>
<td>612</td>
</tr>
<tr>
<td>2006</td>
<td>1700</td>
<td>1870*</td>
<td>1700</td>
</tr>
<tr>
<td>2007</td>
<td>1870*</td>
<td></td>
<td>1870*</td>
</tr>
<tr>
<td>2008</td>
<td>1870*</td>
<td></td>
<td>1870*</td>
</tr>
<tr>
<td>2009</td>
<td>1870*</td>
<td></td>
<td>1870*</td>
</tr>
<tr>
<td>2010</td>
<td>1870*</td>
<td></td>
<td>1870*</td>
</tr>
</tbody>
</table>
### Capacity-expansions of Nylon Yarns 2008-2010 (t/a)

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Capacity (t/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yiwu Huading Nylon Co., Ltd.</td>
<td>20000</td>
</tr>
<tr>
<td>Yiwu Yaxing Fiber Co., Ltd.</td>
<td>10000</td>
</tr>
<tr>
<td>Xiaoshan Qianchao Nylon Co., Ltd.</td>
<td>10000</td>
</tr>
<tr>
<td>Guangdong Gaoyao Jinyi Fiber Co., Ltd.</td>
<td>10000</td>
</tr>
<tr>
<td>Zhejiang Mesbon Chemical Fiber Co., Ltd.</td>
<td>23000</td>
</tr>
<tr>
<td>Zhejiang Xinfu Chemical Fiber Co., Ltd.</td>
<td>10000</td>
</tr>
<tr>
<td>Quanzhou Tianyu Chemical Fiber Weaving Industry Co., Ltd.</td>
<td>11000</td>
</tr>
<tr>
<td>Zhejiang Xinlun Chemical Fiber Co., Ltd.</td>
<td>8000</td>
</tr>
<tr>
<td>Zhejiang Tianyi Polyamide High-Tech Co., Ltd.</td>
<td>8000</td>
</tr>
<tr>
<td>Jiangsu Qiangli Chemical Fiber Co., Ltd.</td>
<td>10000</td>
</tr>
<tr>
<td>Junma Tyre Cord Company Ltd.</td>
<td>15000</td>
</tr>
<tr>
<td>Shandong Shifeng Double-Star Tire Co., Ltd.</td>
<td>30000</td>
</tr>
<tr>
<td>Zhejiang Xinlun Chemical Fiber Co., Ltd.</td>
<td>20000</td>
</tr>
<tr>
<td>Fujian Liheng Nylon Technology Co., Ltd.</td>
<td>45000</td>
</tr>
<tr>
<td>Changle Jinjiang Technology Co., Ltd.</td>
<td>45000</td>
</tr>
</tbody>
</table>

### Nylon 6 Fiber Production in China 2000-2010

![Graph showing Nylon 6 Fiber Production in China 2000-2010](image-url)

- **Production (KT)**
- **Growth Rate (%)**

- **2000**: 150
- **2001**: 1,240
- **2002**: 1,330
- **2003**: 1,420
- **2004**: 1,510
- **2005**: 1,600
- **2006**: 1,690
- **2007**: 1,780
- **2008**: 1,870
- **2009**: 1,960
- **2010**: 2,050

*Note: Data for 2010 is estimated.*
Nylon 6 Fiber Production in China by Application

- Textile Yarn: 65%
- Industrial Yarn: 23%
- Fishing-net Monofilament: 6%
- Staple Fiber: 4%
- BCF: 2%

Imp & Exp of Nylon 6 Yarns in China 2000-2010

- Imp Vol:
- Exp Vol:

- Imp Growth Rate %:

- Exp Growth Rate %:
Major Variety of Imported Nylon 6 Yarns in China 2000-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Nylon Filament Yarn</th>
<th>High-tenacity Yarn</th>
<th>Nylon DTY</th>
<th>Twisted Multiply Yarn</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>2002</td>
<td>110</td>
<td>100</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>2004</td>
<td>120</td>
<td>110</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>2006</td>
<td>130</td>
<td>120</td>
<td>110</td>
<td>100</td>
</tr>
<tr>
<td>2008</td>
<td>140</td>
<td>130</td>
<td>120</td>
<td>110</td>
</tr>
<tr>
<td>2010</td>
<td>150</td>
<td>140</td>
<td>130</td>
<td>120</td>
</tr>
</tbody>
</table>

Imp & Exp of Nylon Staple Fiber 2000-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Imp Vol</th>
<th>Exp Vol</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>2002</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>2004</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>2006</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>2008</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>2010</td>
<td>35</td>
<td>45</td>
</tr>
</tbody>
</table>
Summary

Current Situation:
Capacity, production and demand for nylon fibers have hit record highs, but the growth rates drop significantly, while import substitution rate continues to be renovated higher.

Opportunity:
Demand for nylon textile yarns has been healthy.

Challenges:
1. Textile yarn market will see another round of capacity expansions in the future.
2. Risks:
   1) Cord fabric, staple fiber and fishing-net yarn markets, all are not booming enough.
   2) Overall demand increases less rapidly.
3. Double Cost Pressures from Anti-dumping Measures on Imported CPL and Nylon Chips
Chapter Two: Nylon 6 Market in 2010

Prices for CPL and Nylon 6 Chips 2008-2010
Gross Profits of Nylon 6 Chip Producers 2008-2010

X1=High-speed Spinning Chip Producers
X2=Conventional Spinning Chip Producers

Prices for Nylon 6 Textile Yarns 2008-2010

FDY70D/24F DTY70D/24F POY85D/24F
Gross Profits of Nylon 6 Textile Yarn Producers 2008-2010

Price (Y/T)

- FDY 70D/24F
- DTY 70D/24F
- POY 85D/24F

Gross Profits of Nylon 6 Cord Fabric Producers 2008-2010

Price Spreads between CPL & Cord Fabrics
6-month Moving Average of CPL/Cord Spread
Summary for Nylon 6 Market 2010

- H1 2010: Demand has been robust and prices have surged straight ahead.
- H2 2010: Prosperity has continued and prices have hit a record high.
- Major Positive Factors:
  - Booming Economy & Robust Demand for Textile Products
  - High Prices for CPL on the Tight Availability
- As for producers’ gross profits, those for nylon conventional spinning chip producers and cord fabric producers have softened slightly, while those for nylon high-speed spinning chip producers and textile yarn producers have increased. The whole industry has seen no negative territories.

Chapter Three: Outlook for 2011
Influential Factors on Market 2011

- Macro Factors
- Cost Factors
- Supply/Demand Factors

Macro-economic Situation

- Growth of Global Economy, Continues or not?
- Stronger Expectation of Higher Interest Rates on Heavier Inflationary Pressures in China?
- Will domestic nylon fiber industry and textile industry continue to grow?
- Appreciation or not? Trade Cooperation or Conflict?
- ......

- Confidence is the most important!
Costs: Crude Oil, Cotton & CPL

<table>
<thead>
<tr>
<th></th>
<th>End 2009</th>
<th>23 Nov 2010</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Oil ($/bbl)</td>
<td>80</td>
<td>82</td>
<td>↑ 2.5%</td>
</tr>
<tr>
<td>Benzene ($/ton)</td>
<td>1030</td>
<td>940</td>
<td>↑ 8.8%</td>
</tr>
<tr>
<td>Cotton (cts/lb)</td>
<td>75</td>
<td>122</td>
<td>↑ 63%</td>
</tr>
<tr>
<td>PET Chips ( Y/T)</td>
<td>9200</td>
<td>12300</td>
<td>↑ 34%</td>
</tr>
<tr>
<td>CPL (Y/T)</td>
<td>18600</td>
<td>23300</td>
<td>↑ 25%</td>
</tr>
</tbody>
</table>

***Impact from costs weakens, while that from demand strengthens.

During 2011-2012, CPL demand from domestic nylon 6 chip sector will increase by an average growth rate of past five years’ 12%, or will reach 200kt/yr, based on the expected 600kt/yr new nylon polymer capacities. Meanwhile, availability of the feedstock remains a question, as well as the costs from the anti-dumping measures on CPL imports. So, could CPL prices drop initiatively in the coming years?

**Very Difficult**

Forecast of New Capacities of Nylon 6 Chips 2011

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Capacity (kt/yr)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mildbite Chemical Fiber</td>
<td>Xiaoshan, Zhejiang</td>
<td>60</td>
<td>2011</td>
</tr>
<tr>
<td>Yanzhou Xiangyu</td>
<td>Yanzhou, Shandong</td>
<td>30</td>
<td>2011</td>
</tr>
<tr>
<td>Shandong Anda</td>
<td>Leling, Shandong</td>
<td>30</td>
<td>2011</td>
</tr>
<tr>
<td>Sinopec Baling</td>
<td>Yueyang, Hunan</td>
<td>25</td>
<td>2011</td>
</tr>
<tr>
<td>Hunan Jinbo</td>
<td>Changde, Hunan</td>
<td>30</td>
<td>2011</td>
</tr>
<tr>
<td>Changle Lihang</td>
<td>Changle, Fujian</td>
<td>100</td>
<td>2011</td>
</tr>
<tr>
<td>Sanding Group</td>
<td>Xiaoshan, Zhejiang</td>
<td>120</td>
<td>2011</td>
</tr>
<tr>
<td>Jinjiang Technology</td>
<td>Changle, Fujian</td>
<td>200</td>
<td>2011-2012</td>
</tr>
</tbody>
</table>
In 2011, nylon industry will continue to develop rapidly, especially in nylon high-speed spinning chip sector and textile yarn sector, and the overall capacity is expected to increase, so the producers should avoid low-level redundant development as far as possible.

New huge capacities for nylon chips and fibers will bring more pressures on feedstock supply and more competitiveness to the market, so both run rates and gross profit margin of the producers may drop.

In Fujian, Jiangsu and Zhejiang, nylon industry is still active in capacity expansions, while nylon industry also develops well in Central China and Shandong.
It is expected optimistically that capacity and production of domestic nylon industry will increase in 2011, so will the demand for nylon products, but the competition will be fiercer.

Availability of the feedstock will still be the market focus, and the tightness will lead to the difficulties for the prices for nylon products to drop.

Thank You!